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United States
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Forest Service

Pacific
Northwest
Region

1996



Monitoring Report for the Land and Resource Management Plan

Wenatchee National Forest Fiscal Year 1995

WENATCHEE NATIONAL FOREST

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August 12, 1996

Dear Forest User,

The Wenatchee Forest Plan establishes general direction of all resource management activities on the Forest. It provides for forest protection and coordinated multiple-use management of outdoor recreation, range, timber, watershed, wildlife and fish, minerals, and wilderness. The overall purpose is the sustained production of goods and services for the benefit of the American people.

Monitoring is a key part of Forest Plan implementation. This report summarizes and highlights Forest Service monitoring activities for Fiscal Year 1995 (October 1, 1994 to September 30, 1995); it is also the Five Year summary and evaluation of the Forest Plan since its implementation in 1990.

As Wenatchee Forest Supervisor, I am responsible for ensuring that all Forest management activities comply with the Forest Plan Standards and Guidelines and Management Area Prescriptions. The monitoring and evaluation program tells us how we are doing in implementing the promises made in the Plan. To keep you informed, I have prepared this annual *Monitoring Report* which describes progress made in implementing the Forest Plan as reflected by monitoring and evaluation.

The fires of 1994 burned over 180,000 acres on the Wenatchee National Forest. These fires were the result of increasing vegetation density in the drier portions of the Forest, coupled with dangerous fire weather conditions that year. The Wenatchee National Forest, in cooperation with the Wenatchee Forest Sciences Lab, has been studying historic vegetative conditions and changes which have occurred since early this century. Lower elevation forests on the Wenatchee have smaller trees and much greater fuel buildup than one hundred years ago. The Forest has developed a *dry site strategy* to reduce fire hazard in this vegetation type and to restore sustainable ecological conditions; the implementation of the strategy will take many years and the Wenatchee will remain a high fire risk forest. The Wenatchee Forest Plan recognizes the risk of catastrophic fire in the eastern Cascades. So, I ask for your help in continuing to be careful with fire when visiting the forest.

Our monitoring has identified a problem with soil compaction in some timber sale areas that were logged with tractors. In response, the Wenatchee National Forest has adopted a policy on ground based harvesting systems to reduce impacts on sensitive soils.

The Wenatchee Forest Plan has been amended nine times since its implementation in 1990 through the end of September, 1995. These amendments have kept the Forest Plan current and responsive to the changing needs of the American people. The Plan was substantially amended by the Northwest Forest Plan on April 13, 1994. Whenever the term 'Forest Plan' is used in this document it refers to the Wenatchee Forest Plan and all amendments.

I do not see a need to further revise the Wenatchee Forest Plan at this time. When new scientific information from the *Interior Columbia River Basin Ecosystem Management Project* and current research efforts on the Forest becomes available, I will again evaluate the need to revise the Forest Plan.

If you have questions, concerns, or comments regarding information in this report, the addresses and phone numbers of our Ranger Districts and Supervisor's Office are located inside the cover of this document. I hope you will continue to be involved with the management of your Wenatchee National Forest.

Sincerely,

Sonny J. O'Neal
Forest Supervisor

F I S C A L Y E A R
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MONITORING REPORT

LAND AND RESOURCE MANAGEMENT PLAN

W E N A T C H E E
N A T I O N A L F O R E S T

W A S H I N G T O N

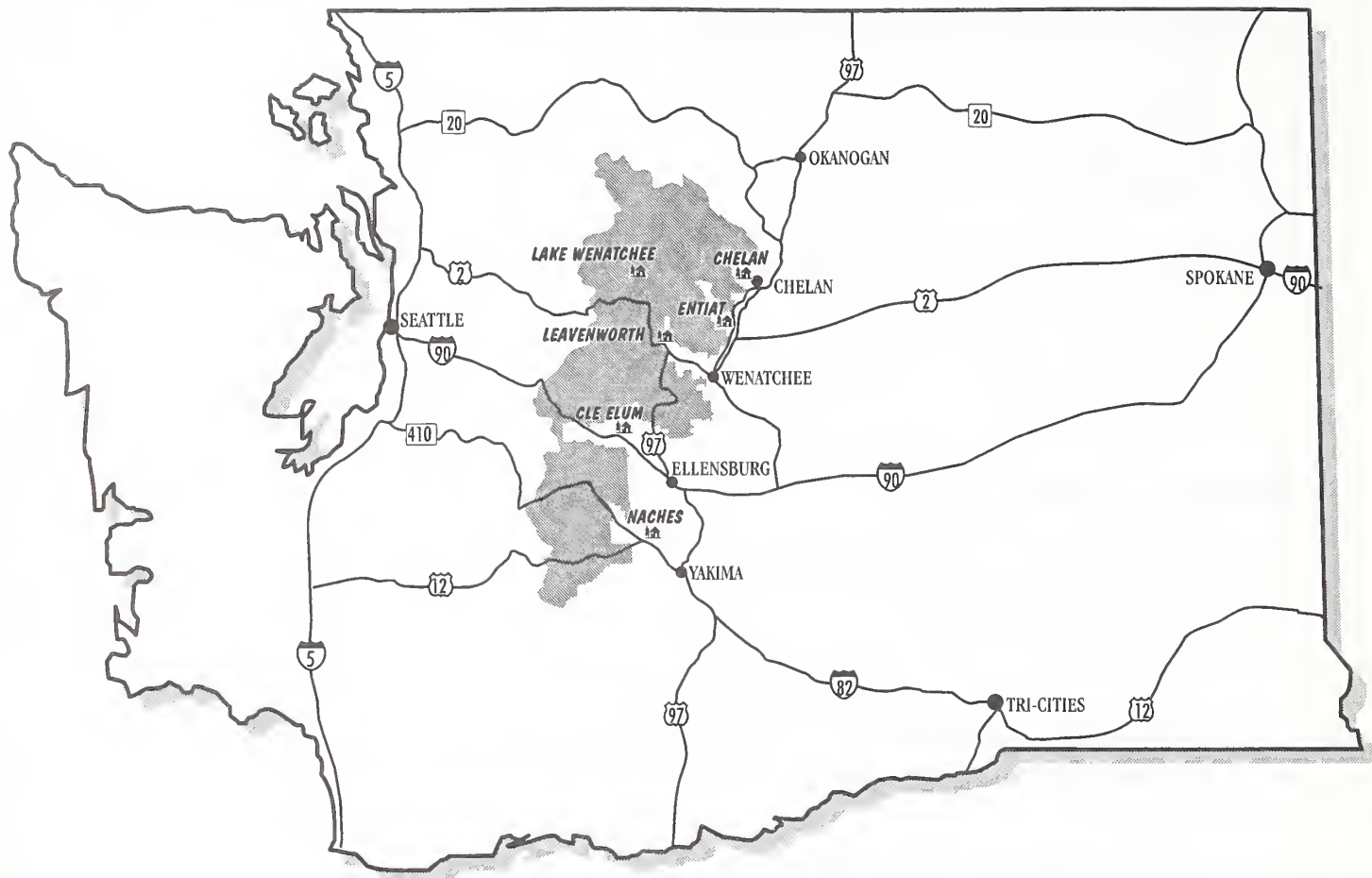


AUGUST 1996

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WENATCHEE NATIONAL FOREST



W A S H I N G T O N

I.

INTRODUCTION

PURPOSE OF THE MONITORING REPORT

The Wenatchee Forest Plan was implemented in 1990 after ten years of analysis and extensive public review and comment. The Plan was amended in 1994 by the Northwest Forest Plan. Preparation of the Forest Plan is required by the National Forest Management Act of 1976. It provides standards, guidelines, land allocations, and philosophy which serves as the basis for all Forest Service management on the 2.2 million acre Wenatchee National Forest (Wenatchee NF).

The purpose of this annual report is to provide information to the Regional Forester, Forest Leadership Team, and the public on how well the Forest Plan objectives are being met. This report represents the 5 year report which is a detailed evaluation submitted with the recommended actions for the Forest Supervisor's consideration. The monitoring and evaluation process will provide information to determine if:

- laws, regulations, and policies are being following, including those found in the Forest Plan Management Area Prescriptions, and Forest-wide Standards and Guidelines, the Regional Guide, and Forest Service Handbooks.
- the management prescriptions are producing the predicted Goals and Objectives or Desired Future Conditions of the Forest environment.
- cost and annual budgets of implementing the Plan are within projected limits.
- the projected range of outputs is being produced. It will also evaluate effects.

A number of monitoring systems are already in place to comply with administrative and legal responsibilities. Forest Plan monitoring does not replace these systems, but rather complements them by addressing specific issues and concerns identified through the planning process.

GENERAL INFORMATION

Monitoring consists of gathering data, making observations, and collecting and disclosing information. Monitoring is also the means to determine how well objectives of the Plan are being met, and how appropriate the management Standards and Guidelines are for meeting the projected Forest outputs and protecting the environment. Monitoring is used to determine how well assumptions used in development of the Forest Plan reflect actual conditions.

Monitoring and evaluation may lead to changes in practices or provide a basis for adjustments, amendments, or Plan revisions. Monitoring is intended to keep the Forest Plan dynamic and responsive to change and new information.

II.

SUMMARY OF THE RECOMMENDED ACTIONS

The following categories of actions are used to summarize those monitoring items needing attention from the Forest Supervisor and Forest Leadership Team. Group Leaders responsible for each monitoring item have recommended actions based on their evaluations (please refer to *Individual Monitoring Items*).

Results are Acceptable/Continue to Monitor

The results for these monitoring questions are either acceptable (within the 'Threshold of Variability' listed in Chapter V of the Forest Plan), or more than one or two years of data is needed to evaluate the results (continue to monitor). For some items, several years of data collection is necessary to evaluate the effectiveness or validity of the Plan. Studies are being initiated to provide the baseline data and inventories necessary to answer these questions.

Change Management Practices

The results for these monitoring questions exceed the 'Threshold of Variability' for a particular monitoring items question in Chapter V. An evaluation of the situation indicates the need to change practices to comply with the Forest Plan.

Further Evaluation/Determine Action

The results for these monitoring questions may or may not exceed the 'Threshold of Variability'. Additional information is needed to better identify the cause of the concern and to determine future actions.

Propose Forest Plan Amendment

Areas where results are inconsistent with the Forest Plan objectives or the Forest Plan direction was not clear. The follow-up action requires either changing or clarifying the Forest Plan through the amendment process. Non-significant amendments may be made by the Forest Supervisor. Significant amendments require Regional Forester approval.

The following table summarizes follow-up actions needed for each Monitoring Question.

Summary Table

Monitoring Item	Results OK	Change Management	Further Evaluation	Forest Plan Amendment
Recreation Opportunity Spectrum	■			
Trails	■			
Developed Recreation		■		
Management of Dispersed Recreation Areas		■		
Wild, Scenic, and Recreation Rivers	■			
Scenery Management	■			
Wilderness	■			
Cultural Resources (Heritage Resources)	■			
Coordination of Forest Programs with Indian Tribes	■			
Sensitive Plants, Biodiversity, and Old Growth	■			
Old Growth and Mature Habitat Indicators	■			
Mountain Goat Habitat	■			
Deer and Elk Habitat		■		
Primary Cavity Excavators			■	
Riparian For Wildlife Indicators	■			
Bald Eagle Habitat	■			
Peregrine Falcon	■			
Grizzly Bear	■			
Gray Wolf	■			
Marbled Murrelet	■			
Bighorn Sheep			■	
Townsend's Big-Eared Bat	■			
Canadian Lynx	■			
Ferruginous Hawk		■		
Common Loon	■			
Harlequin Duck	■			
Red-Legged Frog and Western Pond Turtle	■			
Fisher	■			
Hawk and Owl Nest Sites	■			
Snails	■			
Timber Offered	■			
Timber Harvest Units	■			
Timber Harvest	■			
Silvicultural Practices	■			
Reforestation	■			
Lands Not Suitable for Timber Management	■			
Maintenance of Long-Term Soil Productivity		■		
Fish/Riparian Standards and Guidelines	■			
Effectiveness of Riparian Standards and Guidelines		■		
Fish Management Indicator Species (MIS) Populations	■			
Aquatic Habitat Objectives	■			
Aquatic Ecosystems	■			
Range Management-			■	
Road Management	■			
Insect and Disease	■			
Forest Fire Protection	■			
Use of Prescribed Fire	■			
Air Resource Management	■			
Mining Site Reclamation				■
Mining Operating Plans	■			
Community Effects/Resource Budgets	■			
General Monitoring of Standards and Guidelines	■			

III.

ACTIONS TAKEN ON 1994 RECOMMENDATIONS

This section briefly explains actions taken on last year's recommendations. For more detailed information on a specific activity please refer to *Individual Monitoring Items*.

SCENERY MANAGEMENT

Blewett Pass Highway 97 Viewshed

Additional vegetative changes along the roadside from the top of Blewett Pass to Bonanza campground have been kept to a minimum adjacent to areas of past vegetative treatments.

The Forest continued to work with the Department of Transportation and permittees to minimize signs, structures, and roadside improvements.

In the Peshastin watershed analysis process, altered lands are being identified for future improvement.

An existing slash pile and debris adjacent to Highway 97 was cleaned up and improved the roadside scenic setting.

White Pass Viewshed

Highway 12 was monitored to assure that the highest possible scenic quality was being maintained by designing all activities to retain naturally appearing scenery.

The Forest continued to work in concert with the Department of Transportation toward safety, and functionally and aesthetically pleasing structures in project planning.

The Forest continued to work with White Pass Ski Company to improve signs, blend structures, landscaping, and color scheme. The Forest also worked with Texaco gas station for color painting scheme to blend in with White Pass complex, and also discussed architectural compatibility.

The White Pass Scenic Byway plan is 80 percent complete; it includes an inventory of all existing signs and facilities.

The Hause timber sale implementation met high scenic quality after vegetation management.

Shady Pass Viewshed

In the Entiat Watershed analysis process, altered lands were identified for future improvements.

Rehabilitation efforts of grass seeding to stabilize soil have not been very successful; the recommendation is to allow cut bank identified previously to recover through natural processes to reduce visual contrast of road.

Wenatchee NF personnel decided that it is not feasible to re-arrange blow down trees left for spotted owl habitat to improve scenic quality along the road.

CULTURAL

Seventeen projects were monitored during their activities to ensure that cultural properties present nearby were protected. Almost half of these projects were related to the fire recovery efforts; about 25 percent were related to recreation projects, and the remainder were evenly split between lands and FS facility administration projects.

Twenty-eight cultural sites were monitored during the above projects. No new, previously undiscovered sites were revealed by any project activities. All sites received adequate protection from project activities and their significant characteristics were not affected. Ten sites were monitored during fire recovery activities to ensure they were being protected.

Representatives from the Yakama Indian Nation toured some of the most intensively burned areas from the Tyee Fire in the Mud Creek drainage. Both the Yakama and Colville were notified of the excavations to be undertaken for the Swiftwater Rock Shelters under the Passport in Time program.

SOIL, WATER, AND FISHERIES

Maintenance of Long-Term Soil Productivity

The Forest discontinued the practice of combined timber logging and mechanical (tractor) piling on ash/pumice and other susceptible fine texture soils.

Timber sale contract provisions were utilized to designate and use the same skid trails on multi-entry activities to minimize compaction and other soil disturbance.

Tractor logged and tractor logged/piled areas were monitored to see if they were within Forest Plan Standards and Guidelines.

Surface erosion parameters, such as ground cover, and the effectiveness of drainage features and road closures were monitored during 1995. In addition to bulk density, point sampling of soil textures, organic duff, nutrient, and organic matter content were considered.

Fish/Riparian Standards and Guidelines

Implementation monitoring was done through document and project review by District and Supervisor's Office personnel and project administration.

Effectiveness of Riparian Standards and Guidelines

The Wenatchee has implemented an annual stream survey, sediment, and water temperature monitoring program. These three programs are summarized in the next section, *Individual Monitoring Items*.

Between 1989 and 1995, the Forest has completed stream surveys using the standard Region 6 stream survey protocol on over 1,000 miles of stream.

The Forest is examining the stream inventory data, primarily large wood and pools, to determine if any patterns emerge from the data and how they may relate to parameters such as landtype, climate, vegetation, and road density.

The Forest is exploring an approach to move away from threshold Standards to using a range of conditions one would expect to observe in properly functioning watersheds.

In addition to the stream surveys utilizing the Region 6 protocol, the Forest has established 404 monumented stream survey cross sections on 22 stream reaches. These reaches are located in a variety of stream and land types.

Fish Management Indicator Species

The Forest has not been actively monitoring anadromous fish returns due to established monitoring programs at mainstem Columbia River dams; Yakama Indian Nation spawning surveys in the Yakama River Basin; and Chelan County PUD spawning surveys in the Wenatchee and Entiat Rivers.

No formal redd surveys were conducted after 1991 until 1995 when personnel from the U.S. Fish and Wildlife Service Mid-Columbia Fisheries Resource Office in Leavenworth conducted redd surveys.

The Wenatchee NF and Washington Department of Fish and Wildlife (WDFW) have been cooperatively monitoring bull trout since 1989.

Aquatic Habitat Objectives

Sixty-six in-channel structures were reviewed in 1995. Forty-nine appeared to be fully meeting objectives, 13 were judged to be partially meeting objectives and four were not meeting objectives. In one case a structure may have been contributing to habitat degradation and is going to be removed. Past side channel projects on the Naches Ranger District also appeared to be functioning but winter flooding has damaged at least one.

Past passage improvements appear to have been effective.

RANGE

Allotments continued to be monitored, and necessary administrative action was taken for livestock grazing to be in compliance with Forest Plan Standards and Guidelines.

IV. INDIVIDUAL MONITORING ITEMS

A. RECREATION

Monitoring Item-

RECREATION OPPORTUNITY SPECTRUM (ROS)

The goal is to provide a well balanced array of recreation opportunities across the breadth of the Recreation Opportunity Spectrum (ROS) to meet the public demand for outdoor recreation. The monitoring question is:

Are Forest Management activities resulting in changes in ROS settings; and, do end results meet the experience levels expected in the Forest Plan?

During 1995 no projects were reviewed for ROS changes due to the focus on recovery projects for the fires of 1994. The recreation setting has been affected on about 160,000 acres of the Forest due to the fires. For the most part, the fire changed the appearance and scenic qualities of these burned areas, but affects on the ROS classes should only be short term.

Five Year Review

What has been Learned from Monitoring

The objectives of monitoring projects and activities for potential change in the Recreation Opportunity Spectrum (ROS) Class are to determine if we have deviated from the Forest Plan Standards, and to determine if we are being sensitive to the recreation settings valued by Forest visitors. Over the past 5 years we have randomly selected environmental documents for review to note if the ROS Class has been addressed during planning. We have also reviewed projects in the field to see if the outcome of projects have maintained the appropriate ROS Class characteristics.

Monitoring has been successful in giving a good feel for the quality of our performance in this monitoring item. Environmental documents for management activities have identified the recreation setting objectives for each area and projects have been designed with the necessary characteristics or project modifications necessary to meet the ROS Standards and Guidelines of the Forest Plan. Forest management activities that have been monitored have adhered closely to the Setting Standards and Guidelines.

The ROS classes provide an excellent means to describe the range of recreation settings available to Forest users and have worked successfully in helping us meet Forest Plan recreation objectives. No changes are necessary in the basic ROS classes and the definition criteria. There is some confusion centered around the range of ROS classes described as appropriate in the Standards and Guidelines for some Forest Plan land allocations. It is not clear in some situations if the standard is

calling for retaining the existing condition or ROS class, or whether it is appropriate to change the character of an area in the completion of an activity as long as the condition remains within the range of appropriate ROS classes in the land allocation. It is recommended that in the next planning phase each land allocation have a single ROS classification that is tied to the desired future condition of an area, and the characteristics of the allocation, rather than present a range of ROS classes.

As a result of monitoring planned and implemented activities over the last 5 years, we have learned that the ROS classes as described in the Forest Plan, are very representative of the desires of recreation users and that projects have been done in accordance with the Standards and Guidelines of the Forest Plan. No changes are necessary in the future to meet the desired future condition or Standards and Guidelines for maintenance of the recreation setting. The change to a single ROS class for each land allocation will provide a better representation of the intended ROS class after a project or activity is completed and to better understand and communicate the expected outcome.

Monitoring results over the past 5 years have not led us to recommend any corrective actions be taken.

Changes/updates in Forest Monitoring Plan

No changes in the Monitoring Plan for Recreation Opportunity Class or the recreation setting are recommended.

How well is Forest meeting Plan Goals and Objectives

The monitoring results indicate that the Forest is meeting the goals and objectives of maintaining the ROS settings prescribed by the Forest Plan and is maintaining a good balance of ROS classes across the Forest.

The monitoring methods of selecting random projects to review in the planning, implementation and completion stages, is working well and is within our work force and budget capabilities.

We do need to remap our ROS class delineation to reflect the allocations under the Northwest Forest Plan. The opportunity to do this will be during the next Forest Plan revision.

Recommendations Include:

ROS Class delineation as described in the Forest Plan will need to be monitored as we move into the timber salvage program and vegetation management following the fires. Continue monitoring as scheduled.

Monitoring Item-

FOREST TRAILS

The goal is to manage trail use to provide recreation opportunities in a wide range of recreation settings and in harmony with other resource management objectives. The monitoring questions include:

Are trails providing the variety of opportunities intended in the Forest Plan?

Are trails with mixed users (e.g. horse/hiker, hiker/ORV) meeting the expectations for all intended users?

In 1995, our budget for trail maintenance decreased significantly, particularly for trails outside of wilderness. This decrease came at a time when maintenance needs were high due to the 1994 fires. The four northern Districts on the Forest were focused in the burned areas and getting trails open and safe for visitor use. Trail condition survey work was mostly done in the burned areas to obtain good estimates on the work needed on these trails.

We received very little information from the public concerning user conflicts on trails. Most of the focus of the public was on the trails in the burned areas, and when those trails would be open again.

Five Year Review

What has been Learned from Monitoring

Over the past 5 years, we have received significant comments in the scoping process for trail projects. Trail users with preferences for their mode of travel (i.e. hiking, horses, or motorcycles) have tended to be very polarized. Most feel there are not enough opportunities for their specific interest. Interest groups continue to be very competitive with one another, and meeting the expectations of all groups has not been possible.

Monitoring of trail conditions and use impacts on forest resources, through trail condition surveys, indicates that heavy trail use is resulting in increased impacts on soil, water and vegetation. Declining budgets for trail maintenance and reconstruction are not keeping up with increasing impacts associated with trail use.

From letters and telephone calls received, comments/complaints about user conflicts on multiple use trails has declined since the completion of the Forest Plan. Although there are a few problems each year, we do not view user conflict to be a significant problem outside a few traditionally controversial trails. Many of these problems are being resolved over time through the construction of trail segments and tie-through trails that are relieving congestion and conflict.

The monitoring criteria for the trail system and off-road vehicle use seems to be adequate to help understand problems, and meet the objectives of the Forest Plan.

Monitoring information suggests that the most important problems are associated with heavy trail use and the lack of maintenance funds. In many locations we have resource conditions that do not meet the Standards and Guidelines in the Forest Plan. The extent of this problem can only be determined if we can increase monitoring of resource conditions.

As a result of the Standards and Guidelines in the Northwest Forest Plan Riparian Reserves, increased monitoring of stream conditions is being done during the watershed analysis process. A large percentage of the trail system is located within Riparian Reserves. As watershed conditions are evaluated over time, significant maintenance and relocation of trails will be needed to protect resource values.

Changes/updates in Forest Monitoring Plan

No change in the monitoring plan for Forest Trails is recommended.

How well is Forest meeting Plan Goals and Objectives

The goals and objectives in the Forest Plan are still valid and applicable to current public demands and the resources values. The Forest has been successful in providing a variety of visitor use opportunities; we continue to provide additional miles of multiple use trails and trails for specific user emphasis.

We are not meeting the objectives to manage the trail system in harmony with Forest resource management objectives. Lack of adequate funding and staffing is a major problem. In the future, it appears that user fees that can be returned to the Forest for maintenance and reconstruction may be the only option if increased allocations from Congress does not occur. We receive a great deal of volunteer help; however, even if volunteer maintenance increases, we will not be able to keep up with the vast amount of work which needs to be done.

Recommendations Include:

Continue to place emphasis on obtaining more funds for trail maintenance. Place emphasis on restoring trails impacted by the fires and suppression efforts.

Monitoring Item-

MANAGEMENT OF DEVELOPED RECREATION FACILITIES

The goal is to provide safe, well maintained, developed recreation facilities for the public commensurate with recreation demand. Monitoring questions include:

Are available developed recreation facilities meeting public demand?

Are developed recreation sites, areas, and facilities being adequately maintained to serve the public and protect resource values?

Visitor use at developed recreation sites continues to be very high. Heaviest use occurs on weekends, nearly filling all sites. There is an excess of supply of developed sites during midweek, early and late into the season. The 1994 fires greatly reduced use on the Forest, which appeared to carry over into 1995.

The backlog of recreation site heavy maintenance is still increasing; although in 1995 we added more sites into the concession operation program. Routine maintenance is being completed by concessionaires and we are beginning to get to the backlog of work at concession operated sites.

The Capital Investment Program funding is also decreasing. This program is about our only Federally funded means to reconstruct and rehabilitate worn out recreation facilities. It appears that the third phase of development at Field's Point and reconstruction of campgrounds in the Highway 410 corridor on the Naches Ranger District will be the only projects in this program for the next several years.

In summary, we are able to meet the existing demand for recreation capacity. However, except for the campgrounds managed under the concession program, we are not able to meet public expectations concerning maintenance of facilities and protection of forest resource values.

Five Year Review

What has been Learned from Monitoring

In addition to the goal mentioned above, we are also monitoring to assure that recreation activities are not impacting natural resources in excess of Forest Plan Standards and Guidelines.

Our monitoring has been successful in determining if we are meeting these objectives. Through visitor survey and discussions with recreation users we have gained good perspective in user desires and the quality of the service we have been providing. Our annual pre-operational inspections are identifying hazards and safety problems at our sites in adequate time for these items to be taken care of before operation of the sites.

Visitor use of our facilities remains very high with an increasing trend. Although we still continue to have excess supply of sites during the week, our sites are full to capacity on week-ends. Occupancy continues to increase during the weekdays that are associated with a holiday weekend. Visitors consistently tell us that they would like more amenities in highly developed sites. They also tell us they value lesser developed sites in more semi-primitive settings and do not want those to change.

We have learned that the Standards and Guidelines in the Forest Plan are very adequate to address unacceptable impacts on Forest resource values. With the Northwest Forest Plan amendment we are finding that additional actions will be necessary to protect riparian habitats from developed recreation use.

The backlog of recreation maintenance is increasing. We have taken action to place highly developed campgrounds and similar developed areas under concession

operation so that we can continue to provide high quality service with decreasing budgets. Concession operations will be even more important in the future.

Changes/updates in Forest Monitoring Plan

The current monitoring protocols for developed recreation facilities are adequate.

During monitoring activities that have been necessary for the completion of watershed assessments, it has been noted that there are riparian area impacts that need to be corrected and avoided in the future. Recreation users enjoy camping and other various activities, near lakes and streams. Reconstruction of existing facilities and planned new ones will have carefully consider the placement of facilities to avoid excessive impacts on riparian areas and T&E species habitat, and still provide a quality recreation setting for developed sites.

How well is Forest Meeting Plan Goals and Objectives

We are not able to maintain the quality of facilities in many recreation sites that have been provided in the past. As budgets have decreased over the past 4 years, we have been forced to reduce temporary employees who have done most of the maintenance work, and have not been able to obtain the materials and supplies necessary to repair deteriorating facilities. The Capital Investment Program has been significantly reduced which greatly reduces our ability to rehabilitate worn facilities. Many services to the public have been reduced, such as information, interpretation, security and often requested amenities at developed sites.

We are not doing the vegetation management that needs to be done in most developed sites. Annually, the Forest inspects for hazard trees and removes trees or limbs that pose a threat to visitor safety, but have not been able to do vegetation management plans that will provide direction for the management of all vegetation. We will not be able to maintain the recreation setting at these sites over a long period of time.

In order to meet our goals, significant changes will need to occur in how we get work done. The number and types of sites under concession operation will have to increase. We need to explore the possibilities of private/public ventures as a means to obtain investment into sites and facilities. We will need to obtain more partnerships to expand our capabilities.

Our goals and objectives do not need updating or modification as a result of monitoring results. Our goals are realistic and obtainable, if we are able to secure the funding options that are available to us. This is a factor however, to consider in the future. If budgets continue to decline there will be a point where we will have to consider reducing our Standards.

The refinement of our monitoring protocols for recreation impacts on Forest resource values needs to be considered during the next Forest Plan update. This is probably most necessary for riparian habitats and the Aquatic Conservation Strategy, as a result of the requirements of the Northwest Forest Plan.

Recommendations Include:

Continue to place developed recreation sites and areas under concession permits.

Place a greater emphasis on obtaining partnerships with other agencies and the private sector to help obtain the financial resources to maintain recreation sites and facilities to meet Forest Plan direction.

Monitoring Item-**MANAGEMENT OF DISPERSED RECREATION AREAS**

The goal is to provide opportunities for dispersed recreation activities where compatible with other resource management objectives. Monitoring questions include:

Are dispersed sites meeting public demand?

Is the Recreation Opportunity Spectrum providing the expected variety for Forest users?

Dispersed recreation activities continue to be a high percentage of total recreation use on the Forest. We have a more than adequate supply of dispersed sites and areas in the Roaded Recreation setting across the Forest. The highest demand is for camping spots adjacent to streams and lakes accessible by roads. The increase in user developed roads in riparian areas continues to present a problem. As we continue to gather data from stream and fisheries inventories for watershed analysis, we are finding more and more use areas. Many areas are resulting in impacts on aquatic resources that do not meet the Standards and Guidelines of the Forest Plan.

Five Year Review***What has been Learned from Monitoring***

Monitoring has determined that the Forest has an adequate supply of dispersed recreation sites and areas in the Roaded recreation settings. The only shortage of opportunities are in the Semi-Primitive Motorized and Semi-Primitive Non-motorized classes. Both horse users and motorcycle riders have expressed the desire to have more areas that are in a more natural condition, without much evidence of management activities, but that do not have the restrictions prevalent in wilderness.

Existing dispersed sites on the Forest are heavily used, and we have found significant impacts in riparian areas. These impacts include excessive litter and garbage, sanitation problems, loss of vegetation in meadows and along streambanks, soil compaction and some soil erosion losses. These areas are fully occupied on week-ends and new user built roads are extending the use into previously unused and unimpacted areas.

We have taken action to control vehicle access, provide parking, control use of ORVs, provide toilets, and re-seed impacted soils in only the highest priority areas

where impacts are the greatest. With decreasing recreation budgets we do not foresee the ability to adequately address these problems in the near future.

Changes/updates in Forest Monitoring Plan

The scope of monitoring questions needs to be expanded to include the condition of Forest resources in areas receiving heavy recreation use. Our current monitoring only addresses meeting public demand for opportunities, and providing recreation opportunities in a variety of settings. We need to know if the impacts exceed the Standards and Guidelines of the Forest Plan.

Through inventorying and monitoring streams and riparian areas to gather data for watershed analysis, we have learned that the extent of dispersed recreation impacts in riparian areas is significant in several watersheds. We need to be better able to quantify these impacts and plan for the recovery of these areas through management of dispersed use and the watershed restoration program. This is going to require the modification of the use of some of these areas by the public, and is going to require gaining public support and willingness to help with the recovery process.

No adjustments are needed in our Forest Plan Standards and Guidelines, but we do need to increase our emphasis on these problems and make them higher priority in our work activities.

How well is Forest meeting Plan Goals and Objectives

We are generally meeting our goals for providing a variety of dispersed recreation settings, and are doing well in providing opportunities commensurate with public demand.

We are not totally meeting our objective to provide dispersed recreation activities in compatibility with other Forest resource values in some locations. In order to meet these goals, we are going to need to secure adequate funding to relocate use, rehabilitate impacted areas, manage off-road vehicle travel in riparian areas, provide public information and education, and provide new opportunities when existing areas are closed or use patterns modified.

Recommendations Include:

Rehabilitate and relocate dispersed recreation use in riparian areas through watershed rehabilitation projects and other project opportunities. Continue to inventory and monitor dispersed recreation use and activities as funds allow.

B. WILD, SCENIC, AND RECREATIONAL RIVERS

Monitoring Item-

WILD, SCENIC, AND RECREATIONAL RIVERS

The goal is to retain the character and attributes of rivers recommended for Wild, Scenic, or Recreational designation. The monitoring question is:

Are resource management activities along recommended river corridors being conducted in a manner to provide protection at the appropriate level of classification?

There were no projects on the Forest in 1995 that had the potential to affect the classification determined in the Forest Plan for recommended rivers.

The extensive stream survey and inventory efforts called for in the Northwest Forest Plan continued. These inventories have identified a significant amount of recreation use impacts in streamside riparian areas. During the completion of watershed restoration projects, these impacts will be addressed and appropriate changes will be made in recreation use patterns to reduce or eliminate unacceptable impacts. None of these impacts are considered to be detrimental to the classification level of the rivers; however, they are impacts that need to be addressed to meet the Standards of the Forest Plan.

There were no projects on the Forest in 1995 that had the potential to affect the classification determined in the Forest Plan for recommended rivers.

Five Year Review

What has been Learned from Monitoring

In the Forest Plan, we have nine rivers recommended for inclusion into the Wild and Scenic River System. During the 5 year monitoring period there have been only two activities that had the potential to affect the classification of any of these rivers recommended for designation under the Act. They were projects associated with the reconstruction of Highway 410 along the American River and the flood repair projects on various rivers following the flooding of 1990. Neither of these activities resulted in any detrimental effects on the characteristics of these rivers.

Our monitoring has determined that all project work near the corridors of the recommended rivers has had no effect on the potential classification of the rivers nor any of the rivers attributes.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest Plan objectives for the protection of rivers recommended for designation under the Act have been met without exception.

Recommendations Include:

Complete river inventories during the watershed analysis process and implement restoration projects that will improve resource conditions on rivers recommended for designation. Continue to monitor planned projects within or adjacent to river corridors.

C. SCENERY MANAGEMENT

Monitoring Item -

SCENIC RESOURCE OBJECTIVES

The objective is to manage vegetation and facilities to provide views that are consistent with the stated scenic quality objectives for each management area. The monitoring question is:

Do the cumulative effects of all resource activities within a viewshed meet the desired scenic condition?

The Blewett Pass Highway 97, White Pass Highway 12, and Shady Pass viewsheds were selected for summary analysis. Scenic resource analysis on these viewsheds indicated that the viewsheds vary from natural appearing to an altered condition. Monitoring of these viewsheds was done in FY 1995. Blewett Pass viewshed is in a natural to slightly altered condition throughout most of the travel route, except for the altered condition between Blewett Pass and Bonanza Campground. This altered condition does not meet the Retention Visual Quality Objectives (VQO). Any additional vegetative changes along the roadside between Blewett Pass and Bonanza Campground should be kept to a minimum adjacent to the area of past vegetative treatment.

The White Pass viewshed is in a natural to slightly altered condition throughout the travel route. Vegetative changes throughout the travel route blend well with the natural diversity of landscapes from the Forest boundary to White Pass. The scenic qualities of this viewshed are maintained at a very high level. Vegetation changes and structures along the highway in the viewshed should continue to be monitored and enhanced to protect scenic qualities. Inventory of structures and signage of highway signs has been done for future design for safety, reduced clutter, and scenic enhancement.

The Shady Pass viewshed is in a slightly altered to altered condition. A portion of the viewshed was analyzed to find ways to improve the viewshed through rehabilitation of past management practices. Reducing visibility of existing roads, seeding roadside cuts and fill banks with vegetation, and blending new vegetation management with the old units are some techniques to improve scenic quality. Disposing of slash piles and cleaning of old landings was done in the past with success. Shady Lake Salvage was done in 1995 to clean up the blown down trees. A

portion of the blown down trees in the foreground was left to provide spotted owl habitat. These areas are not aesthetically pleasing. Future vegetative management along the viewshed should be designed to soften the existing older units and to avoid adjacent units where openings do not improve scenic quality.

The catastrophic fire of 1994 created firebreak lines. The area of Chesapeake Saddle, towards Grouse Mountain, has been altered. The strategy is to reduce the visual impact by blending the debris into the earth. The fire created a landscape character and condition change in many high scenic resource concern areas. These areas are along the major viewshed and travel routes of the Entiat Valley, Lake Chelan, Icicle Valley, Leavenworth, U.S. Highway 97, Lower Blewett Pass, and Entiat Mountains. Design arts were integrated with the sciences to blend vegetation with the land forms to create a more sustainable natural appearing landscape. Monitoring of the scenery resource of the 1994 fire will continue in the future. The goal is an enhancement of scenery resources by providing landscape goals and objectives to maintain high scenic integrity and provide a sustainable natural appearing landscape character.

Five Year Review

Please refer to the 5 year review discussion under *Stand Character Goals*.

Recommendations Include:

Blewett Pass Highway 97 Viewshed

To maintain scenic values, additional vegetative changes along the roadside from the top of Blewett Pass to Bonanza Campground should be kept to a minimum adjacent to areas of past vegetative treatments, except to ensure public safety in campgrounds and adjacent to Highway 97.

Continue working with the Department of Transportation and permittees to minimize signs, structures, and roadside improvements.

White Pass Viewshed

Continue to work with White Pass Ski Company to improve signs, blend structures, landscaping, and color scheme.

Continue monitoring Highway 12 to maintain the highest possible scenic quality by designing all activities to retain naturally appearing scenery.

Continue to work in concert with the Washington State Department of Transportation toward safety, and functionally and aesthetically pleasing structures in project planning.

Continue developing the Scenic Byway Plan for Highway 12.

Shady Pass Viewshed

Identify areas adjacent to the existing old cutting units which require scenic rehabilitation before any further vegetative treatment is planned.

Allow cut bank to recover through natural processes to reduce visual contrast of roads.

In spotted owl habitat, consider rearrangement of down trees in a manner to protect scenic quality as viewed from roads and trails.

Monitoring Item -

STAND CHARACTER GOALS

The objective is to manage vegetation so that the stand character (species and structural mix) is moving in the direction specified for each Visual Quality Objective (VQO). The monitoring question is:

Are related Standards and Guidelines being implemented, and do they achieve stated goals and objectives, particularly scenic character goals?

The desired future condition for scenery is a multi-story stand composition variety and diversity of large trees in groves, clumps, and/or scattered throughout the landscape. A park like stand composition and a high degree of naturalness is desirable. In the last seven years, more extended shelterwood-type cutting practices and partial cutting concepts have been initiated throughout the viewsheds. This helps achieve a long-term forested environment with a more natural appearing landscape of scattered groups, and individual large trees. Thinning to reduce stand density has been done in limited amounts to enhance future large tree characteristics.

An example of specific scenic goals to maintain and perpetuate large yellow bark ponderosa pines was monitored along the Blewett Highway 97 on the Diamond Timber Sale. Large clumps of trees were left and other trees thinned out to make room for the existing large trees to be seen from the Highway. In another sale, a multi-level stand composition was left to provide scenic variety and reduce the visual contrast as viewed from Highway 97. In both cases, the ecosystem was enhanced through integration of forestry and the design arts.

Five Year Review***What has been Learned from Monitoring***

The monitoring process of the last 5 years provided the development of a scenery checklist. The checklist will provide a more complete continuity of integrating the design arts with management of our natural resources. The trend is to incorporate and achieve scenery resource character goals and scenic integrity of landscapes that are sustainable over time to maintain and enhance the outstanding mountain, valley, and lakeshore scenery. Future monitoring will focus on the areas of

the Forest where the *dry site strategy* will be programmed and implemented to reduce fire hazard in years ahead.

In the past 5 years, Forest Landscape Architects reviewed one or more projects per Ranger District in order to assess the potential cumulative effects of resource activities on scenery. Field review of the area where projects have occurred was done along three major viewsheds (see above narrative for more information).

The trend of harvest practices in the last four years has been towards fewer openings (clearcutting) and heavily oriented towards partial cutting and thinning where trees are left to achieve scenic quality goals.

Another goal is to reduce the amount of contrast in the viewshed. The trend is that the viewsheds are recovering to more naturally appearing landscapes. In addition, timber management has occurred on fewer acres since 1990, down from approximately 14,000 acres to about 2,000 acres annually in 1995.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives.

Recommendations Include:

Continue monitoring as scheduled; continue monitoring high scenic areas of the 1994 fire restoration projects.

D. WILDERNESS

Monitoring Item-

RECREATION IMPACTS ON WILDERNESS RESOURCES

The goal is to perpetuate wilderness character, natural ecological processes, and to provide recreation opportunities appropriate in wilderness. The monitoring question is:

Is recreation visitor use or management resulting in changes in the physical, biological, or social settings that approach Limits of Acceptable Change (LAC) Standards specified in the Forest Plan?

In 1995 we faced declining budgets in recreation and trail maintenance, which also placed fiscal limitations on the wilderness management program. There were less staff in the backcountry, increasing the work load on people who were able to function as Wilderness Rangers, while doing a lot of trail maintenance work as well. Due to the late duration of the snow pack, many of the areas we desired to inventory for campsite condition were partly covered with snow until late July and even into early August. Very little additional monitoring data was gathered.

In the Alpine Lakes Wilderness, we were able to manage a lightning ignited fire as a prescribed natural fire (PNF). This fire near Edward Peak in the Rat Creek drainage, was ignited September 4th and reached a total size of 6 acres before being extinguished around the 1st of October by fall precipitation. A monitoring effort was required on this PNF during the period when it was active. This was the first PNF in the Alpine Lakes Wilderness since the early 1980s.

Recreation visitor use in wilderness increased in 1995. However, 1994 was a low use season due to the fires and fire danger. Most of the use increases were in the already heavily used areas of wilderness. Recreation use impacts continue to show an increasing trend.

Five Year Review

What has been Learned from Monitoring

The objective of our monitoring is to determine if the impacts of recreation visitor use in wilderness are exceeding the limits of acceptable change. The limits of acceptable change consist of resource indicators for social, physical and biological wilderness resources, and Standards for these indicators. These Standards are incorporated in the Standards and Guidelines of the Forest Plan. The objective of these Standards is to achieve our legal requirement to manage wilderness to perpetuate wilderness character, natural ecological processes, and to provide the recreation opportunities appropriate in wilderness.

Monitoring data and information gathered by Wilderness Rangers indicate that recreation visitor use is resulting in increasing impacts on wilderness resources in areas that are easily accessible for weekend overnight trips and day use. Areas of wilderness that are more distant from trailheads and out of range of weekend trips are showing basically static conditions. Recreation visitor use is steadily increasing (2 percent to 3 percent per year), particularly in the most popular and easily accessed areas.

We are monitoring campsite density, size and condition, area of vegetation loss, number of damaged trees and vegetation trampled. We are also monitoring social encounters and campsite intervisibility.

The current Standards and Guidelines in the Forest Plan and the Alpine Lakes Plan have some major difficulties that need to be resolved. Standards for visitor social encounters while traveling, and campsites vegetation loss, are very difficult and expensive to measure or sample. Encounters may be a realistic measure of social impacts but it cannot be effectively monitored with the funding and staff currently available. We have been working on a basic inventory of campsites for many years and have not yet completed this for all wildernesses.

Data collected varies greatly between individual monitors, even after detailed training. The campsite data is only valuable as a general indicator of campsite condition. We need a more simplified system of condition classes that could be quickly estimated with a short check list.

Some Standards are not compatible. We have a party size limit of 12 people and/or stock, and a campsite size limit of 600 square feet. This campsite size is roughly an area 20 feet by 30 feet. It is not reasonably possible for a party of 12 to camp within an area of this limited size.

A mandatory self-issue non-limiting permit or registration system provides the best means to monitor numbers of wilderness visitors, destinations, and duration of stay. We need to employ this method in all wildernesses for which we have inadequate use data.

Recreation use is resulting in some impacts that are not included in the Forest Plan Standards and Guidelines or in the monitoring items. Recreation use is increasing the establishment and spread of noxious weeds and non-native plants. High levels of visitor use is resulting in significant trail and trail maintenance problems. We are seeing increases in trail braiding, soil erosion, and user built trails. We have no Standards and Guidelines for these resource concerns.

The best opportunity to make the needed changes and resolve the other difficulties with resource condition indicators and Limits of Acceptable Change Standards will be during the next Forest Plan revision.

Changes/updates in Forest Monitoring Plan

No changes in the objectives or direction in the Monitoring Plan are recommended.

How well is Forest meeting Plan Goals and Objectives

In general, we are meeting our goals and objectives for wilderness as related to the impacts of recreation visitor use. However, there are easily accessible areas and some extremely popular areas, where impacts exceed the capability of the environment to recover. Also, there are areas where the social experience of many visitors is not within their expectation for wilderness. In these areas we are not meeting our Plan Goals and Objectives.

We have management actions identified in the Plan to resolve most all of the impact problems, and we have been establishing regulations and visitor use requirements to address many of these problems. We have been increasing user education programs to help users understand the need to practice low impact use. In our effort to be more effective with management actions to protect wilderness resources, we need better support from a greater cross-section of wilderness users. Currently, many people question the validity of many of our Standards and Guidelines and also the data gathered. Our monitoring effort has to be supported by a high percentage of wilderness users for monitoring results to be credible. Then users will share in our concern for wilderness resource values and support the actions necessary to meet our goals and objectives.

Our goals and objectives are directly related to the Wilderness Act and are not in need of changing based on the results of monitoring. The decline in wilderness

management budget and the loss of staff and Wilderness Rangers is going to make it very difficult to meet our goals in the future.

We have not identified the need for additional goals or objectives since the Forest Plan and ROD were signed

Recommendations Include:

Continue to work toward a complete inventory of campsites, and increase the follow-up data gathering, as budgets allow, to provide a better understanding of the impacts of increasing use.

Take the appropriate management actions (as described in Forest Plan Appendix E, page E-26-28) to resolve the recreation impacts.

E. CULTURAL RESOURCES (HERITAGE RESOURCES)

Monitoring Item -

CULTURAL AND HISTORICAL SITE PROTECTION

The goal is to protect cultural and historical resources from vandalism, disturbance from project activities, and natural degradation. Monitoring questions include:

Are the National Register characteristics of unevaluated and significant cultural resource properties being protected?

Are all reasonably locatable cultural resources being discovered during project area reconnaissance?

In FY 1995, 47 proposed project areas were surveyed for the presence of cultural properties. A total of 144,739 acres were inventoried, which resulted in 32 new prehistoric sites and 44 new historic sites being recorded. This brings the Forest's total number of recorded cultural properties to a little over 825. By far, the largest number of acres surveyed (over 100,000) during FY 1995 were associated with the emergency rehabilitation and recovery projects for the 1994 Chelan County Fires (Tyee, Hatchery, Rat, and Round Mountain). These totaled 25 percent of the projects surveyed and over 70 percent of the acres surveyed. Range projects (at 11 percent) were second highest in the number of acres surveyed, totaling over 20 percent. Green timber sale projects were third highest in the number of acres surveyed (almost 10 percent of the yearly total) but were only 9 percent of the projects surveyed. Recreation, recreation special use permits, trails, and Wilderness projects totaled 30 percent of the projects surveyed, but came to less than 1 percent of the total acres surveyed. Projects associated with lands special use permits, land exchanges, and rights-of-way were third highest in the number of projects, being 25 percent; however, the acres surveyed was also less than 1 percent of the total. The

number of large scale projects jumped dramatically during FY 1995 due to the efforts focused on the fire recovery projects. Planning areas for these projects varied from 500 to almost 30,000 acres.

The fire recovery projects contained the highest percentage of cultural properties (almost 50 percent); range allotments contained almost 30 percent of the properties; timber projects had almost 15 percent, and the remainder of cultural properties were evenly split between recreation related projects and lands related projects. The obvious trend is that recreation and lands projects tend to be small in areal extent and involve few cultural properties, yet make up the majority of projects. The field survey and report documentation of each of these smaller scale projects is proportionally much more expensive than larger scale projects such as timber sales, fire recovery, and range allotment permits. However, the majority of the time is spent on the larger scale projects.

Seventeen projects were monitored during their activities to ensure that cultural properties present nearby were protected. Almost half of these projects were related to the fire recovery efforts; about 25 percent were related to recreation projects, and the remainder were evenly split between lands and FS facility administration projects. Twenty-eight cultural sites were monitored during these projects. No new, previously undiscovered sites were revealed by any project activities. All sites received adequate protection from project activities and their significant characteristics were not affected.

All standing historic structures eligible for or listed in the National Register of Historic Places have yearly maintenance reviews. These include all of the Forest's historic administrative buildings and lookouts, all of the picnic shelters within the campgrounds, and a number of trail shelters constructed by the Civilian Conservation Corps (CCC) during the 1930s. Minor maintenance is undertaken yearly as needed on most of these structures. Those in need of major renovation or maintenance are on the Regional Capital Investment Program; however, Congress has greatly cut back funds for this program in recent years and there is little likelihood the Forest will receive the amount needed to stabilize these structures before they pose a safety hazard to the public.

As previously stated, the vast majority of the heritage compliance program was focused on the fire rehabilitation and recovery projects during FY 1995. From about August through November 1994, the Forest undertook the massive emergency fire rehabilitation effort needed to ensure the protection of life and property from possible winter floods or landslides from the burned slopes. Detailers were brought in from other National Forests in the Region to help with pre-project surveys to ensure that the placement of rock and log check dams and catch basins did not impact significant elements of cultural properties. During these survey efforts (which also included the work of rehabilitating fire lines), 16 new cultural sites were recorded and 22 previously recorded sites were protected. Eight of the new sites were found on privately owned lands.

A programmatic agreement was developed between the Wenatchee National Forest, the Washington State Historic Preservation Officer, the Advisory Council on Historic Preservation, the Yakama Indian Nation, and the Colville Confederated Tribes. The purpose of this programmatic agreement was to expedite the process for complying with Section 106 of the National Historic Preservation Act, while ensuring that cultural properties would be protected from activities associated with recovery projects. In summary, 101,086 acres were surveyed for cultural properties. These areas contained 73 cultural properties, of which 37 were previously recorded and 36 were new discoveries. Eighteen of the previously recorded sites had site updates completed. The fires burned ten previously recorded historic sites, most at high intensity. These included the Young Creek Trail Shelter, determined eligible for listing in the National Register of Historic Places. The garage of the Sugarloaf Peak Lookout was also burned, and the Lookout itself suffered some scorching, which is listed in the National Register. The results of the recovery inventories indicated a more concerted effort is needed in protecting cultural properties from fires. Fire response teams often lacked pertinent information about cultural properties in the path of the fires and therefore, could not make decisions on the risk of protecting the sites. Ten sites were monitored during recovery activities to ensure they were being protected.

Several cultural site evaluations were completed during FY 1995. These reports evaluate a site's eligibility for listing in the National Register of Historic Places. Five historic sites and six prehistoric sites were found to be ineligible. Additionally, a thematic evaluation of the site type historic roadside dumps was determined ineligible.

In April 1995, the Lake Chelan Passport in Time project took place. This project used the help of seven PIT volunteers over a period of 5 days to survey the shoreline of Lake Chelan, by foot and by kayak. As a result of this survey, a village site noted in the ethnographic literature was confirmed and numerous historic mining features were discovered. This project owes its success to the considerable kayaking and small craft skills of the volunteers and their willingness to embark on a strenuous endeavor.

In September 1995, the Swiftwater Rock Shelters Passport in Time project occurred. This project used the help of 14 volunteers over a period of three weeks to help excavate a small rock shelter located in one of the Forest's picnic areas. The site had been vandalized and looted for decades, yet surprisingly, much was left below the upper deposits. Two public tours of the site during the excavation attracted 65 people to visit the site and view the excavation. Besides explaining the methods and discoveries of the excavators, the tours emphasized the importance of protecting the area's cultural heritage. Other public outreach programs included community school classes and participation in the Washington State Public Archeology Week.

The Forest continues its active cooperation with the Bureau of Reclamation on projects located on adjacent lands with Forest personnel monitoring project activities for the BOR. Work continues on the Bumping Lake Dam and the Kachess Lake

Dam. The Forest also continues its active membership in the Yakima Resource Management Cooperative by participating on the Archeological and Cultural Task Group. During FY 1995, the Forest helped fund a contract to survey randomly selected 1/4 sections in the Frost Mountain Quadrangle to test the validity of the Task Group's predictive model of archeological site location.

A few cultural sites were recorded or their reports updated as part of the heritage management program. More work is needed to update the condition and reports of sites recorded over ten years ago.

Five Year Review

Please refer to the 5 year review discussion under *American Indians and Their Culture*.

Recommendations Include:

The Forest is continuing to work on a State-wide training session for cultural resource specialists and fire personnel to produce a plan for better site protection in future fires. This session is tentatively scheduled to take place in the fall of 1996. The State Historic Preservation Office will be a co-sponsor of this session.

Monitoring Item -

CULTURAL AND HISTORICAL SITE REHABILITATION

The goal is to rehabilitate damaged sites eligible for inclusion in the National Register of Historic Places. The monitoring question is:

For sites eligible for inclusion in the National Register of Historic Places, is appropriate stabilization or rehabilitation of damage being completed?

During FY 1995, a contract was awarded for the substantive rehabilitation and stabilization of the Salmon La Sac guard station, a two and one-half story log building listed in the National Register. The Forest was fortunate in obtaining the services of an expert contractor on historic log structures, who takes great care to leave as much of the historic elements as possible, while ensuring that new replacements are of exceptional quality and compatible with the originals.

The Naches Ranger District continues its annual program of rehabilitating the American Ridge Ski Lodge, a building built by the Civilian Conservation Corps in the 1930s. Volunteers are mostly CCC alumni that help out during a long weekend to replace and repair the broken elements of the building.

Five Year Review

Please refer to the 5 year review discussion under *American Indians and Their Culture*.

Recommendations Include:

Continue monitoring of those historic sites that are in danger of collapsing due to the lack of funding for proper maintenance.

Monitoring Item -

AMERICAN INDIANS AND THEIR CULTURE

For those trust resources identified in treaties with American Indians, what are their conditions and trends?

Are sites of religious and cultural heritage adequately protected?

Do American Indians have access to and use of Forest species, resources, and places important for cultural, subsistence, or economic reasons, particularly those identified in treaties?

The 1855 Treaty signed with the confederated tribes and bands of the Yakama Indian Nation states in Article 3:

“The exclusive right of taking fish in all the streams, where running through or bordering said reservations, is further secured to said confederated tribes and bands of Indians, as also the right of taking fish at all usual and accustomed places, in common with the citizens of the territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.”

Please refer to the fisheries monitoring section for information on that trust resource. Please refer to the beginning of this section for a discussion on the protection of cultural properties.

Where known, religious properties (or what are assumed to be religious properties by their nature) are protected through avoidance by project activities. However, the Indians do not share information about areas currently used for religious purposes. Thus, those properties without obvious evidence of such use may be inadvertently impacted by this lack of knowledge.

Both the Yakama Indian Nation and the Colville Confederated Tribes are signing parties to the programmatic agreement for the recovery projects for the Tyee, Hatchery, and Round Mountain Fires. Both reviewed and provided suggestions for the draft versions of this agreement from its very beginning to its finalization. Both

receive copies of the annual report written as part of the terms of this agreement. They are invited to submit concerns or suggestions for improvements to inventory and recording methods for the next year's work under this agreement.

Representatives from the Yakama Indian Nation toured some of the most intensively burned areas from the Tyee Fire in the Mud Creek drainage. They expressed an interest in returning to the area to begin collecting roots of traditional importance to their culture. However, they also expressed some concerns with the aerial seeding of sterile wheat and fertilizer, in that this has caused the indigenous roots to be crowded out by the non-native wheat and prematurely ripen due to the fertilizer. Long term effects of the aerial seeding on native roots is unknown.

Both the Yakama and Colville were notified of the excavations to be undertaken for the Swiftwater Rock Shelters under the auspices of the Passport in Time program. The Yakama Nation's archeologist visited the project last summer to view the methods used for excavating and to ensure there was a proper ratio of volunteers to qualified archeologists on the site.

The Yakama Nation has voiced some concerns regarding access and use of Forest species, resources, and places of cultural, subsistence, or economic reasons. There is confusion among Tribal members about Forest Service road management system; they are confused which roads are closed to their use and which are open; which roads are seasonally closed and for what length of time. Many have left the Forest, assuming their access road is closed, instead of continuing on their gathering journey. Yakama input also indicated there is some confusion on the part of some Forest Service employees about Tribal members gathering Forest resources under their treaty rights. Closer coordination may also be needed when scheduling major events in areas traditionally used as gathering locations. One conflict has occurred, and Tribal elders felt they had to leave since the other activity was already occupying the site.

Five Year Review

What has been Learned from Monitoring

The obvious overall trend is that we appear to be well within our expectations for completing project support. Focus on this aspect of the heritage program has been at the cost of managing the heritage resources themselves.

We are continuing to monitor those areas listed in the previous years' recommendations; such as the condition of the deteriorating picnic shelters, and the amount of eroded cultural deposits being washed away from the sites along the Wenatchee River. Under the auspices of the national Passport in Time program, one of the sites being severely eroded by the Wenatchee River was excavated. A final report on the results of this excavation and archeological analysis is due to be completed soon. However, other than monitoring, funds and work have not been directed at resolving the problem of deteriorating structures or the erosion caused by the River.

Previous years' recommendations have indicated that a greater awareness to protect cultural properties from wildfire and fire suppression activities is needed. During the recovery surveys conducted last summer, at least ten sites were discovered burned to the ground. Fire response teams lacked adequate information on the location and nature of cultural properties in the paths of the fires in order to make informed decisions on the risk of protecting these sites.

Changes/updates in Forest Monitoring Plan

No changes can be recommended in the monitoring items; these are the minimum required by the Regional Office and Northwest Forest Plan.

How well is Forest meeting Plan Goals and Objectives

A review of the Forest Plan objectives for heritage resources reveals the following trends:

We have accomplished all of the acres to be surveyed in association with project support for the ten year period; or over 400,000 acres. This equates to a 180 percent accomplishment rate for survey as project support.

We have not surveyed any acres that were not associated with project support; thus we have accomplished zero percent of the acres to be surveyed in Wilderness, back country, and high probability areas.

We are right on target with recording the expected number of cultural properties over the period, with 301 being recorded for 100 percent accomplishment.

We have evaluated the National Register eligibility of only 50 percent of the cultural properties as what was targeted. This increases the back log of sites to be evaluated each year.

We have conducted four site excavation projects; which equates to a 133 percent accomplishment of the targeted three sites.

We have not completed any cultural property management plans; although three should have been completed.

We have interpreted or studied a little less than half (46 percent) of the number of cultural properties that were estimated to be accomplished in the Forest Plan objectives.

Recommendations Include:

Better means of communication is needed to reach those members of the Tribes that actually use the Forest's resources. Meetings between District Rangers and staff with representatives of the Tribes may be needed in order to air concerns in an open environment, so problems can be addressed and resolved.

F. COORDINATION OF FOREST PROGRAMS WITH INDIAN TRIBES

Monitoring Item-

COORDINATION AND COMMUNICATION OF FOREST PROGRAMS WITH INDIAN TRIBES

The goal is to coordinate with appropriate Tribal representatives for all projects in which Indians may have concerns. Monitoring questions include:

Are American Indian rights being protected on National Forest lands?

Are projects with activities, or areas of concern to Indians, being coordinated with appropriate Tribal representatives?

Protection of Native American treaty rights is incorporated in Forest decision making. Consultation with Tribes that have an interest in management activities on the Forest is ongoing. The Memorandum of Understanding between the Yakama Indian Nation and the Forest Service continues to guide anadromous fish habitat management. Firefighter training was accomplished this year in cooperation with the Yakama Indian Nation.

Five Year Review

Please refer to the 5 year review discussion under *American Indians and Their Culture*.

Recommendations Include:

Continue cooperation and monitoring as scheduled.

G. SENSITIVE PLANTS, BIODIVERSITY, AND OLD GROWTH

Monitoring Item-

MAINTENANCE OF SENSITIVE PLANT POPULATIONS

The goal is to provide appropriate habitat to maintain viable populations or enhance populations of all threatened, endangered, and sensitive plant species. The monitoring question is:

Are sensitive plant species populations being maintained or increasing?

There are over 50 sensitive plants on the Wenatchee National Forest. Many are known to occur while others are suspected to occur. All have limited distribution and some are in inaccessible areas. One is a candidate for federal listing as threatened or endangered and four are species of concern. The primary criteria to determine which species are monitored are: (1) rarity of the plant, (2) threats, (3) accessibility, and (4) funding.

Sometimes a proposed project has the potential to impact sensitive species; this creates an opportunity for monitoring effects of that activity on the plant. Monitoring has focused on rarer plants and those that have significant threats. Consequently, plants that occur in areas where management activities commonly occur often receive more attention. Plants that grow in inaccessible areas may not be monitored due to lack of threats and the physical difficulty of reaching them. Funding is also an important consideration, for monitoring is an expensive endeavor. It is difficult to initiate or continue monitoring when funds are limited and vary from year to year.

The plants that have been monitored are: Wenatchee Larkspur, Chelan rockmat, Thompson's clover, Showy stickseed, Long-sepaled globemallow, Pine broomrape, Clustered Lady's slipper, Henderson's ricegrass, Smoky Mtn. Sedge, Botrychium species, Sierran cliffbrake, and Seely's silene.

Some monitoring activities have used very formal plot techniques while others have been much more informal and anecdotal in nature. Most of the rarest sensitive species occur on the Leavenworth District. As a result most of the formal monitoring has occurred on that District. For most species listed above, monitoring is still in progress. Henderson's ricegrass, Smoky Mtn. sedge, Botrychium species and Sierran cliffbrake all were sampled but monitoring was not continued, mostly because of personnel changes or the monitoring was short term to determine the effects of a particular management activity.

Long-sepalled globemallow

Long-sepalled globemallow was first formally monitored in 1995. However, informal observations following the Dinkelman fire in 1988 were also made. At this point it appears that fire stimulates seed germination and improves habitat conditions. Monitoring of fire effects on this species and tracking some populations will help to determine the longevity of the plants that established after fires in recent years.

Seely's silene

Fire effects monitoring began in 1995 for Seely's silene. Prior to that no formal monitoring regimen was in place. This species grows in areas impacted by rock climbers. Monitoring to determine the effects of rock climbing needs to be implemented.

Henderson's Ricegrass

Although limited in distribution, this species is not as rare or as threatened as other species. Population monitoring probably will not occur unless obvious threats are observed.

Sierran Cliffbrake

In cooperation with Washington State University, several areas were monitored to determine the effects of prescribed fire on the noxious weed *Crupina vulgaris*. This was a short term effort to determine the effects of fire in the area. Some

cliffbrake plants were marked in the burn plots to ascertain the fire effects. Although there was some loss of individuals, the plants generally seemed to tolerate fire well. This species is abundant where it occurs but it is very limited in occurrence. Threats are rather low here and the population is inaccessible. Monitoring does not need to continue unless some threat becomes apparent.

Oregon checkermallow

Oregon checkermallow is not currently being monitored.

Five Year Review

What has been Learned from Monitoring

Very little monitoring was completed in 1994 due to the large fires in the Wenatchee area. As a result, there is a gap in the data.

A variety of sensitive plants have been monitored over the last 5 years. Valuable information has invariably appeared when monitoring has been consistently and carefully done. However, funding limitations and personnel changes have sometimes resulted in inconsistent monitoring.

Showy Stickseed

Showy Stickseed has been monitored for 5 years for both population numbers and morphological characteristics. Although census numbers are somewhat variable from year to year, the general trend in population is downward. Monitoring should continue for this species, both census work and morphological studies. Further, taxonomic studies to determine if the three known populations represent more than one species should be completed in the future.

Wenatchee Larkspur

This species has been monitored for over 5 years. Initial monitoring began in the mid-1980's as a graduate project; this work has been expanded to include more attributes. Population numbers have varied tremendously from year to year such that the data are inclusive on the trend of the populations. Shorter term studies have determined that the plant does not do well in dense shade and that fire appears to result in a positive plant response. One portion of a major population has been precommercially thinned (trees) in order to determine the effects of that activity on the population. This very rare species exhibits a high degree of yearly fluctuation in population numbers. Consequently it is very difficult to determine population data with just a few years data. Monitoring needs to continue for this plant in order to establish trend.

Pine Broomrape

Pine Broomrape has been formally monitored for 4 years. This work has focused on population structure, reproductive strategy and whether or not the plant

is parasitized. There was also a question of the effects of dust on the plants reproductive capability. Results suggest that the plant is an annual. These plants are autogamous (self-pollinating) so they don't require insects and typically pollinate themselves before the flowers open (so dust doesn't affect productivity). Many plants are parasitized by insects. This species is widespread but rare and often occurs in managed areas. There is a need to determine the effects of different management activities on this plant. The relationship between this plant and its host species, Oceanspray, deserves some work.

Clustered Lady's slipper

Through the Leavenworth District, a number of short and long term studies have been initiated for Clustered Lady's slipper. Some work has been ongoing for 4 years. The work has addressed habitat, reproduction (including seed germination and dispersal), and some population monitoring. General conclusions indicate that this plant can tolerate fairly high shading, typically occurs in early to mid successional stands, is an obligate outcrosser (cannot self-pollinate), and has a high flower to fruit ratio. Although it produces thousands of tiny seeds they don't disperse very far. Further, observations after the Rat/Hatchery fire suggests that any fire that consumes the duff will result in reduced plant numbers. This species is widespread but rare and often occurs in managed areas. There is a need to determine the effects of different management activities on this plant. The factors that limit seed viability and establishment, if better understood, would help in the management of this plant.

Thompson's Clover

This species is a very rare endemic known from only a few populations. However, there are thousands of plants and the threats are limited. Further, this is a plant for which a Research Natural Area was established on the Forest. Anecdotal evidence indicates that this plant responds favorably to fire and will encroach into forested sites once the trees are killed by fire. Some formal sample transects were established in the 1970's and re-read in the early 1990's.

Chelan rockmat

Chelan rockmat monitoring began in the early 1990's when permanent plots were established. No results have been documented yet. In 1995, a study to determine the effect of fire on the plant was initiated. Preliminary results indicate that fire effects are quite variable. The species typically does not occur in burned or burnable habitat. Population trend monitoring was begun on this species but has not occurred for two years; this monitoring should continue at least on an every other year basis. Also, the fire effects work started in FY 95 should be continued long enough to draw some conclusions. There is also a chance that those sample areas could continue as trend monitoring sites.

Monitoring of Botrychium species and Smoky Mtn. Sedge was initiated in the early 1990's (Botrychiums in the Mill Creek drainage and Smoky Mtn Sedge near Nason Creek). No conclusions can be drawn because only the initial plot layout has been completed; monitoring efforts need to continue as both of these populations are in threatened areas.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The main goal in the Plan is to maintain viable populations of all native plant species and to prevent listing of any sensitive plants. Our efforts to survey prior to disturbance, avoid impacts and cooperatively monitor with other agencies and groups have prevented negative impacts in almost all cases.

Recommendations Include:

Continue to monitor existing plots and to standardize methodology. Establish additional monitoring strategies and plots as funding allows.

Monitoring Item-

BIODIVERSITY

The goal is to maintain native and desirable introduced or historic plant and animal species and communities. Provide all seral stages of all plant associations in a distribution and abundance to assure species diversity and viability. A desired future condition is to establish the local needs of management indicator species, rare species, and the proportion of seral stages that allows for natural diversity. The original questions proposed in the Wenatchee Land and Resource Management Plan are:

Is the trend of biological diversity moving as estimated?

Is the model for biological diversity being used on project and sub-drainage evaluations?

These questions were based on the premise that a diversity model would be developed and that predictions of biological diversity could be estimated. This has proven to be difficult, and consequently, the monitoring questions are inappropriate. However, the Northwest Forest Plan was later completed which provided some evaluation questions. It is suggested that these questions be used as a measure of biodiversity in the future. They are:

Is the Forest ecosystem functioning as a productive and sustainable ecological unit?

Is the use of prescribed fire or fire suppression maintaining the natural processes of the Forest ecosystem?

Are desired habitat conditions for the northern spotted owl and the marbled murrelet maintained where adequate, and restored where inadequate?

Are habitat conditions for late-successional forest associated species maintained where adequate, and restored where inadequate?

Are desired habitat conditions for at-risk fish stocks maintained where adequate, and restored where inadequate?

Is a functional interacting, late-successional ecosystem maintained where adequate, and restored where inadequate?

Did silvicultural treatments benefit the creation and maintenance of late-successional conditions?

Will the overall conditions of the watersheds and provinces continue to be productive over the long term?

These questions do not provide a direct measure of biodiversity. Rather, they address critical elements and processes important for maintaining biodiversity. Several initiatives have placed a major emphasis on biodiversity, including: (1) ecosystem management, (2) use of native species for restoration and rehabilitation, (3) watershed assessments & watershed restoration, and (4) Northwest Forest Plan (Late Successional Reserve (LSR) assessments). These initiatives address issues on a landscape scale, consider use of natives in all revegetation activities, and relate current conditions to historic conditions in the watershed assessment process. Maintaining the species and processes within a natural range on a watershed level is a major step toward addressing biodiversity concerns in those watersheds.

Five Year Review

The major increases in biodiversity awareness in the past 5 years has been very positive. The initiatives and emphasis areas mentioned above should result in a greater assurance of biodiversity maintenance across the Forest.

Recommendations Include:

Specifically address the new monitoring items developed in the Northwest Forest Plan; assess the efficiency of establishing quantitative biodiversity sample areas.

Continue to assess the rate of old growth forest retention.

H. WILDLIFE

Management Indicator Species Habitat

Management Indicator Species are plant or animals species whose population characteristics can be used to evaluate the effects of land and resource management practices on the habitats they use.

Monitoring Item -

OLD GROWTH AND MATURE HABITAT

INDICATORS: spotted owl, pileated woodpecker, marten and northern three-toed woodpecker.

The goal of the indicator species program is to provide habitat to maintain viable populations of all old growth and mature habitat vertebrate species on the Forest. Monitoring questions for these species include:

Are Forest Plan allocated sites being maintained?

Are established sites being used by indicator species?

NORTHERN SPOTTED OWL

Most spotted owl sites were monitored by NACSI or the Forest in 1995. The number of young produced from all nests was low but still somewhere between 80 to 95 percent of all young produced in the State of Washington. The Forest began the Snoqualmie Pass AMA Plan in 1995 which will address one of the two major potential connectivity barriers on Forest between Late Successional Reserves. This Plan and the decisions made will affect the long term populations and viability of the spotted owl and other organisms dependent upon old growth and mature habitat.

Five Year Review

After the 1994 fires it was apparent that maintaining old growth habitat would take active management. Due to 100 years of fire suppression and protection of old growth habitat, the trend for this habitat for the next 40 to 80 years is likely downward. There was 562,715 acres of spotted owl habitat (old growth or mature habitat) in 1993, and the fires eliminated 9,512 acres, leaving 553,203 acres. In 1995, few acres of old growth or mature habitat were reduced in timber sales, but some acres had quality reductions due to development or safety measures for recreation. How much of a future downward trend in habitat there will be depends on the management of the Forest and weather conditions (dry years and lightning). There are different kinds of old growth (dry, mesic, mixed, moist, high elevation, riparian dry and wet riparian).

Our latest estimates of the 1994 wildfire effects are that there was some habitat for spotted owls eliminated for 30 owl sites. This is different than what was reported in the 1994 monitoring report due to better information.

Northern Spotted Owl Information

Fiscal Year	Pairs	Resident Singles	Other Singles	Fledged Owls	Owls Banded	Owls with Radio Transmitters
1989	55	NA	72	NA	50	0
1990	116	6	81	NA	200	18
1991	146	24	60	98	95	29
1992	164	20	67	207	215	74
1993	174	26	69	38	58	16
1994	181	6	46	128	182	45
1995	141	9	44	74	150	46

The banding and radio telemetry data are still being collected. Research papers are being completed by Pacific Northwest Research Station that will help the Forest to better understand and manage for spotted owls.

Recommendations Include:

Track old growth and mature habitat to provide for all wildlife species. Track habitat by dry, mesic mixed, moist, high elevation, riparian dry and wet riparian groupings.

PILEATED WOODPECKER, NORTHERN THREE-TOED WOODPECKER AND MARTEN

Spotted owls, pileated woodpeckers, northern three-toed woodpecker, and marten are all indicators for mature and old growth habitat and are affected by changes in this habitat.

Five Year Review

Pileated Woodpecker Information

Fiscal Year	Estimated Population	Acres Inventoried	Acres Improved	Structural Improvements
1990	380	0	0	0
1991	380	100	25	20
1992	380	7,300	0	0
1993	380	1,800	110	0
1994	380	400	227	197*
1995	380	700	664	107*

* Trees that were either fully or partially girdled in the live crown to create snags.

Populations estimates are from models based on insufficient information, therefore trends are shown as no change. Actual populations are unknown at this time. Some inventory and improvement of habitat work is being done.

Northern Three Toed Woodpecker Information

Fiscal Year	Estimated Population	Acres Inventoried	Acres Improved	Structural Improvements
1990	Unknown	0	0	0
1991	Unknown	20	0	0
1992	800-1200	3,100	0	0
1993	800-1200	1,100	40	0
1994	800-1200	1,000	227	220
1995	900-1300	3,600	664	124

Populations estimates are from models based on insufficient information, therefore trends are shown as no change. Actual populations are unknown at this time. Some inventory and habitat improvement work has been completed.

The ecosystem recovery projects for the 1994 fires planned to leave sufficient snags, when available, to meet the needs of cavity excavator species. This should be beneficial to the Northern Three Toed Woodpecker. The fires have created additional habitat for the three toed woodpecker so populations are suspected to increase in the next 5-10 years.

Pine Marten Information

Fiscal Year	Estimated Population	Acres Inventoried	Acres Improved	Structural Improvements
1990	1,200	0	0	0
1991	1,200	1,100	0	0
1992	1,200	5,600	0	30
1993	1,200	1,300	100	3
1994	1,200	2,600	0	7
1995	1,200	21,922	0	66

Populations estimates are from models based on insufficient information, therefore trends are shown as no change. Actual populations are unknown at this time. Some inventory and habitat improvement work has been done.

The effects of the 1994 fires may never be analyzed for species other than the spotted owl. In 1995 the Forest began to load the inventory data and sightings of wildlife in Wildobs database. Wildobs provides a place for storage of information and for quick retrieval. This system should be the source of information for monitoring.

Recommendations Include:

The following should be the questions for monitoring for mature and old growth indicator species. The areas being maintained for old growth and mature species have changed since 1989 (from OG-1 and OG-2 to LSRs and MLSRs).

Are populations being maintained as predicted?

Is habitat capability (quality and quantity) and distribution being maintained as predicted?

Is there connectivity between areas being managed for old growth and mature habitat.

Monitoring Item-**MOUNTAIN GOAT HABITAT**

The goal is to maintain or increase populations and to provide animals for recreational enjoyment. The concern is to maintain or increase sub-populations.

Are Forest Plan allocated sites being maintained?

Are established sites being used by indicator species?

Five Year Review

The Forest Plan allocated sites are being maintained; there was no disturbance to the sites. Habitat quality and numbers of mountain goats are decreasing on the North end of the Forest. Habitat on the south end of the Forest has been declining since the 1960's when road construction increased. The population trends on the south end appear to be stable. These trends have been documented by the WDFW in inventories of mountain goat populations. From this information the priority and severity of the downward trend can be determined. This analysis should lead to some projects for habitat improvements that may begin reversing the downward habitat quality and population trends.

Mountain Goat Information

Fiscal Year	Estimated Population	Acres Inventoried	Acres Improved	Structural Improvements
1990	1,600	0	0	0
1991	1,600	5,000	0	0
1992	1,600	2,550	150	0
1993	1,600	36,650	150	100
1994	1,600	12,000	0	0
1995	<1,600	8,050	0	100

Recommendations Include:

Analyze existing data to determine needs and priorities for management of mountain goats.

Develop a management strategy to reduce conflicts between goats and human use, especially Off Road Vehicles and Four Wheel Drives.

Monitoring Item-

DEER AND ELK HABITAT (BIG GAME INDICATOR SPECIES)

The goal is to maintain habitat capability to support populations identified in the Forest Plan and provide animals for recreation enjoyment. Monitoring questions include:

Are populations being maintained as predicted?

Is habitat capability being maintained?

Are there elk concerns with forage resources?

Deer surveys on burned winter range were completed in 1995 and will be repeated in 1996 in cooperation with the WDFW. This will help the Forest determine where the deer are wintering, and future population trends. This same kind of survey should be completed on other winter ranges managed by the Forest.

Five Year Review

Deer numbers have decreased in reaction to the 1994 fires which burned significant portions of winter range. Buck to doe ratios have increased on the northern part of the Forest (from four bucks/100 does to nine-ten bucks/100 does) the last two years. The new levels of bucks per 100 does meets the objectives for buck numbers.

The Watershed Assessments completed to this point indicate that use of forage by elk in meadows is exceeding Forest Plan Standards. Recent numbers of calves per 100 cows indicates that survival of calves is on the low end of potential; this is thought to be because of nutritional stress during breeding season and late pregnancy caused by long hunting seasons (WDFW). It appears that the quantity and quality of forage available on the Forest is less than can support the existing numbers of elk. Populations of elk will continue to decline unless there is a change in management and population numbers are adjusted in coordination with the WDFW. The Naches Ranger District is working with the WDFW to develop a coordinated strategy dealing with the livestock/elk issue.

Recommendations Include:

Monitor deer and elk use of winter ranges.

Coordinate more closely with the WDFW on maintaining healthy deer and elk herds. Agree on some additional desired future conditions and ways to get to those conditions.

Develop a plan for management of deer and elk.

Improve elk use of the landscape through projects with WDFW, YIN, RMEF and others. Agree on monitoring items and implement monitoring to see if project meet their objectives.

Emphasize coordination with WDFW to develop a strategy to deal with the livestock-elk forage utilization issue on the Cle Elum and Naches Ranger Districts.

Monitoring Item-

PRIMARY CAVITY EXCAVATORS

(Indicator Species for dead and defective trees)

The goal is to provide habitat to maintain viable populations. Maintain number, size and distribution of trees and snags to meet habitat capability objectives by management area. Monitoring Questions Include:

Are primary cavity excavator habitat and replacement trees being left in the proper numbers, sizes and distribution?

Is the habitat being utilized as expected?

Are down trees being provided?

Two major new issues were identified to be resolved for Primary Cavity excavator habitat in 1995:

The number and size of trees to leave for snags and down wood is different where all trees have been killed versus a area that has large green trees existing for replacement of snags and dead down logs.

There is a deficiency of large snags and coarse woody debris, as well as large green trees to replace those that fall or rot, in some areas within the dry forest habitat type.

To answer the first issue above, new guidelines were developed for the leaving of standing dead tree species, diameter and numbers to be left in burned areas.

To answer the second issue, a new strategy for managing the dry habitat type has been developed. This strategy will reduce the number of small trees, allow for increased growth to create big trees and reduce the potential for large fires to kill all trees over a large area.

Five Year Review

Even though new issues and resolution have been identified and implemented, monitoring and long term trends are not available for habitat or species use of these habitats. Research was funded through the Wenatchee Pacific Northwest Lab to: (1) determine longevity of different species of snags after fires, and (2) determine wildlife species use of different densities and sizes of snags in the 1994 fires.

Primary cavity excavator habitat needs to be better defined and information collected on a landscape level to determine trends. Every acre provides some primary cavity excavator habitat (1 percent to 100 percent of potential) but even though the Forest meets the guidelines, the trend of snags and primary cavity excavators has not been determined for the Forest, a watershed, or a drainage.

Some information on snags and habitat potential has been developed on the Cle Elum District where snag cutting for firewood has been eliminated (except where excess snag or down tree numbers have been identified).

Primary Cavity Excavator Information

Fiscal Year	Estimated Habitat	Acres Inventoried	Acres Improved	Structural Improvements
1990	1,550,000	NC	0	0
1991	1,550,000	720	0	236
1992	1,550,000	13,262	147	63
1993	1,550,000	2,400	2,950	154
1994	<1,550,000	2,300	217	251
1995	<1,550,000	5,770	644	220

Recommendations Include:

Complete a Primary Cavity Excavator Habitat Conservation Plan that identifies how to monitor population trends and habitat.

In the dry forest type, provide for the increase of large trees and snags while reducing the potential of wildfires.

Monitoring Item-

RIPARIAN FOR WILDLIFE (INDICATORS)

The goal is to provide habitat to maintain viable populations. Maintain number, size and distribution of trees and snags to meet habitat capability objectives by management area. Monitoring Questions Include:

Are populations being maintained as predicted?

Is habitat capability being maintained?

One hundred acres of inventories for amphibians using riparian areas was completed in 1995. This adds to the amphibian surveys of previous years. Data has been entered into Wildobs. From this database some trends, areas of use, where inventories are completed and where inventories are not needed can be determined. After inventories have covered all the potential habitat in sufficient detail some accurate range maps and population trends for amphibians may be determined.

Five Year Review

Since the implementation of the Northwest Forest Plan riparian and water habitats have been maintained or actions taken to improve habitat. Examples are:

Roads have been moved, surfaced, or closed to improve this habitat.

Dispersed recreation sites have been moved, rearranged, or closed to decrease the effects to riparian and water habitat.

There are many species using water and riparian habitat. Habitat is increasing as a result of protection measures for wetland and riparian habitat within the Northwest Plan.

Recommendations Include:

Complete entering of existing inventories in Wildobs database and complete an analysis of what we know.

Design inventory plans that will show population trends.

Proposed, Endangered And Threatened Species

The goal is to manage key habitat to improve status of threatened or endangered species to a point where they no longer need protection under the Endangered Species Act.

Endangered and threatened wildlife species found on the Forest are the bald eagle, peregrine falcon, grizzly bear, gray wolf, northern spotted owl and marbled murrelet. All reported sightings of threatened and endangered species were documented and except for the spotted owl all sightings known have been entered in Wildobs. The entering of information into the database has made information more accessible and more frequently used in assessments.

The spotted owl has been discussed in the indicator species section of this report.

Monitoring Item-

BALD EAGLE HABITAT (threatened species)

Monitoring questions include:

Are existing nest sites producing young as anticipated?

Are nest, roost and perch sites being maintained?

Management of bald eagle habitat is continuing to improve as shown by assessment and protection of a roost site during the 1995 Bear-Potato EA. Additional effort is needed to identify roost and perch sites, so that this aspect of recovery can be attained.

Five Year Review

The number of active nests is holding steady. The number of young and the number of nest sites have not reached recovery goals for the Forest. If habitat improvements for riparian habitat and fish populations continue there is potential to achieve recovery in 5 to 10 years.

Bald Eagle Information

Fiscal Year	Potential Nest Sites	Existing Nest Sites	Young Produced	Acres Inventoried	Acres Improved
1989	1	1	1	NC	0
1990	34	2	2	NC	0
1991	34	2	2	1,800	0
1992	34	3	2	1,000	0
1993	34	4	4	2,650	160
1994	34	4	6	1,400	0
1995	34	4	7	2,445	0

Data is available back to 1985.

Recommendations Include:

Continue to expand work on eagles to achieve recovery goals.

Inventory and maintain roost and perch sites.

Develop site management plans for active bald eagle sites.

Monitoring Item-

PEREGRINE FALCONS (endangered species)

Monitoring questions include:

Are recovery sites being maintained?

Are sites occupied?

Potential sites were entered into GIS and Wildobs in 1995; as a result sites were easily tracked, and assessments of projects were able to consider potential sites. Some of the potential sites will be surveyed for projects to determine if sites within the project areas are active.

Five Year Review

The Forest has achieved the recovery goal of one active nest site. From the number of potential sites plus the number of birds hatched and raised on nests there is potential for two to four additional sites to have nests in 1996. An inventory of sites is planned to begin in 1996.

Peregrine Falcon Information

Fiscal Year	Number Hatched	Potential Nest Sites	Existing Nest Sites	Young Produced	Acres Inventoried	Acres Improved
1988	0	Unknown	0	0	0	0
1989	5	80	0	0	5,000	1
1990	5	80	0	0	500	0
1991	11	80	0	0	500	1
1992	6	80	1	3	1,000	0
1993	5	80	1	2	1,000	0
1994	5	81	2	5	1,500	0
1995	0	82	2	5	2,000	0

Recommendations Include:

Continue to monitor potential and active nest sites.

Prepare site management plans for known nest sites.

Monitoring Item-

GRIZZLY BEAR (threatened species)

The monitoring question is:

Are guidelines for the North Cascade Grizzly Bear Recovery Area being implemented as they become established?

The Grizzly Bear Recovery Plan is close to completion.

Grizzly Bear Information

Fiscal Year	Potential Den Sites	Existing Den Sites	Young Produced	Acres Inventoried	Acres Improved	Structures Improved
1994	Unknown	0	0	1,000	117	5
1995	Unknown	0	0	500	114	5

Recommendations Include:

A decision on finalizing the recovery plan is needed; then, the Forest can organize and begin planning for implementation.

Monitoring Item-

GRAY WOLF (endangered species)

The monitoring question is:

Is habitat capability on an increasing trend?

Five Year Review

Ungulate populations (wolf prey) are generally on a downward trend due to decreases in forage quality, increases in human activities both on and off the Forest, and increases in highways and homes in the eastern Cascades. LSR and AMA planned management may decrease the potential for big game forage but may increase security cover by closing roads and providing for cover connectivity. This decreasing habitat trend has been identified for elk and forage in watershed analysis on the south end of the Forest.

Plans are being formulated to see if this trend can be changed. Some of these plans deal with subjects including: (1) closer cooperation with WDFW, (2) bighorn sheep plan, (3) increase quality of habitat for mountain goats, (4) dry site management, and (5) crossings of highways for big game and other species.

Populations of wolves are likely not fully utilizing the prey or security cover available. Seventy-one thousand acres were inventoried and five structures improved for gray wolves in 1994. Seventeen thousand two hundred acres were surveyed and five structures put in place for gray wolves in 1995. Two responses from wolves were heard during howling surveys.

The trend of wolves on the Forest is likely an increasing population even though the habitat available is thought to be decreasing.

Recommendations Include:

Inventory to locate dens and verify wolf use on the Forest.

Monitoring Item-

MARBLED MURRELET (threatened species)

Monitoring question.

Are populations and habitat being maintained?

Approximately 70 acres were surveyed for marbled murrelet in 1995. Only one murrelet has been verified on the Forest and that one was on the western edge on the Cascade Crest. Some potential marbled murrelet habitat was removed by logging after surveys that meet Regional protocol determined no murrelet were using the habitat.

Five Year Review

No occupied marbled murrelet habitat has been decreased in amount or value. Therefore the trend of habitat is downward but the populations as best we know are being maintained.

Recommendations Include:

Continue to monitor projects within the range of the species.

Monitoring Item-

HABITAT AND SPECIES IDENTIFIED AS CANDIDATES FOR THREATENED STATUS (sensitive species)

Monitoring question:

Is habitat capability on an increasing trend?

Candidate species and sensitive species are not the same list. The candidate list is a United States Fish and Wildlife Service (USFWS) list and the sensitive list is the Forest Service list. The sensitive species list has not been officially updated since 1989 in the Region and 1990 for the Forest when the list was identified in the Forest Plan. Therefore, the sensitive species list is out of date.

BIGHORN SHEEP

The study between the Forest and WDFW continued through the year and into FY96.

Five Year Review

Habitat is increasing from the 1988 and 1994 fires. Populations are stagnated because of the small number of animals available to provide genetic viability. Animals are being relocated from healthy herds within the State by the WDFW to supplement the herds within and near the Wenatchee National Forest.

The WDFW has completed a plan for the State. Potential habitat has been identified. A plan is needed to determine where and what changes are needed to manage for this species. Within this plan potential conflicts between the domestic sheep in range allotments and bighorn sheep use overlap need to be resolved.

Recommendations Include:

Continue the study with WDFW.

Prepare a plan for the area from the Wenatchee River north to the Okanogan National Forest. Identify the areas and numbers of animals to be maintained.

TOWNSEND'S BIG EARED BAT

Another site with a single big eared bat was found on Cle Elum District in 1995. This site needs additional monitoring and study.

Two ANABATs (records sounds bats make) were bought to go with a cooperative bat use identification project which inventoried 160 acres. This project is with WDFW, Boise Cascade Corporation and Washington State University. This project should lead to monitoring protocols and experience to carry out those protocols.

Five Year Review

Habitat is being maintained through implementation of the Boulder Cave Management Plan which has provided some seasonal and daily use restrictions on the cave. The habitat and populations in Boulder Cave are being monitored and seem to be improving. No reproduction is occurring inside the cave as did in historic times.

Recommendations Include:

Locate and protect the reproductive site or sites for the Boulder Cave population.

Inventory habitat and species to determine their range. Report sightings of these species and enter in Wildobs database.

CANADIAN LYNX

Habitat was stable for 1995 but habitat population trends have not been determined. The watershed analyses completed in 1995 show lynx habitat primarily dominated by mid-successional stages with the least habitat in the early successional stage. The best habitat would be about 30 percent of each early, mid, and late successional stages.

Track surveys were completed on about 3,600 acres. All lynx sightings on Forest were entered into Wildobs. These sightings are throughout the Forest and are few in number.

Recommendations Include:

Inventory throughout lynx habitat to determine if populations are present, and if so, their condition. Report sightings of these species and enter in Wildobs database.

Develop a map of habitat by quantity and quality so trends can be determined.

CALIFORNIA WOLVERINE

Habitat was stable for 1995 but population trends have not been determined. Populations are small (five to 20). All wolverine sightings on Forest were entered

into Wildobs. These sightings are throughout the Forest and are few in number. They generally are located in cirque landforms. Cirques may be primary habitat for this species.

Recommendations Include:

Inventory throughout wolverine habitat to determine if populations are present and their condition. Report sightings of these species and enter into Wildobs database.

Develop a map of potential denning habitat.

FERRUGINOUS HAWK

Habitat is being maintained. There are very few sightings of Ferruginous Hawks on Forest. No reproduction is evident on the Forest; birds may use the Forest for feeding and during migration across the Forest.

Recommendations Include:

Remove this species from the sensitive species list for the Forest.

COMMON LOON

Habitat and population trends are unknown. There are opportunities to increase nesting habitat along the shores of lakes. Records of sightings and reproduction are entered into Wildobs. There are few sightings on Forest.

Recommendations Include:

Establish a protocol and plan for inventorying habitat and species.

Begin systematically surveying for species use.

Develop maps of habitat and population trends.

Work cooperatively with Bureau of Reclamation on water releases, timing and nesting habitat along shores of lakes to increase potential for reproduction.

HARLEQUIN DUCK

Habitat is changing as floods and water levels below dams change. These changes affect the amount of feeding habitat available and likely nesting success. Populations are low and trend of habitat and populations is unknown.

Records of sightings and reproduction are entered into Wildobs. For some parts of the Forest a map of potential habitat has been produced. Some birds were banded for a study in 1995.

Recommendations Include:

Establish a protocol and plan for inventorying habitat and species.

Develop maps of habitat and population trends.

Work cooperatively with Bureau of Reclamation on water releases, timing and nesting habitat along rivers to increase potential for reproduction.

RED-LEGGED FROG, LARCH MOUNTAIN SALAMANDER AND WESTERN POND TURTLE

General surveys for amphibians were completed on 6 acres, and 80 acres of habitat was inventoried for Larch Mountain Salamander. Maps have been developed using available data to show distribution of some amphibian species. More information is needed to determine the range of these species and their population and habitat trends.

Five Year Review

Habitat for these species is limited to sites with high water tables for reproduction. This habitat is not increasing but decreasing in amount and availability to wildlife as it is used by recreationists and livestock. As traffic increases more amphibians will be killed as they move from water habitats across roads to forested or other water habitats.

The rate of habitat decline has slowed since the implementation of the Northwest Forest Plan. Habitat quality seems to be improving but the population trends may be decreasing. The Forest is entering all sightings in Wildobs and more inventories are being completed to find out what the real trend of habitat and population are.

Recommendations Include:

Inventory ponds, seeps and marshlands on the Forest.

Inventory for amphibians and reptiles around wetland habitats.

Inventory for Larch Mountain and Van Dykes Salamander (sensitive species that may inhabit the Wenatchee NF).

FISHER

Fisher sightings have been entered in Wildobs. There are quite a few. The trend of habitat and populations is unknown.

Recommendations Include:

Survey for fisher using established protocol.

When fisher are found, place transmitters on them to locate other populations and determine what habitat is being used.

OTHER WILDLIFE

Monitoring Item-

HAWK AND OWL NEST SITES

The goal is to maintain viable populations and provide animals for recreation enjoyment. The monitoring question is:

Are nest sites being protected during implementation of habitat disturbing activities.

In 1995 it is estimated that between 55,000 and 65,000 acres were inventoried for raptor nests. Most often the inventories were conducted for northern goshawks and spotted owls, but red-tailed hawk, Coopers hawk, American kestrels, osprey, great-horned owls, spotted owls and barred owl nests were also located.

All known nests were protected. It is a high priority to enter nest sites in Wildobs and get UTM coordinates so sites can be tracked. The goal is to maintain known sites in 1996 and beyond.

All projects consider known nest locations of hawks and owls in project design. Project conservation measures are designed for protection on a site by site basis. For 1995 this was most important in the fire areas, where nests are limited to unburned trees.

In some projects inventories to locate raptor and owl nest sites were not completed; if a nest site is found during project implementation then protection measures are implemented.

Five Year Review

There are many hawk and owl nests on the Forest and most are being protected. Each year more sites are found, better records are kept, and monitoring indicates our success for maintaining nest sites gets better.

Recommendations Include:

Survey for a wider variety of species and complete pre-activity surveys to locate nests on all projects. In 1996, the great gray owl surveys will be required for activities implemented in FY 1997.

Visit known nests and collect information on whether or not the nests are active or not, reproductive information, and UTM coordinates.

Record data in Wildobs database with UTM coordinates.

SNAILS

The monitoring question are:

Are species present?

Are species and habitat being protected?

The Northwest Forest Plan does not require surveys, only protection of known sites in 1995. Some inventory work was completed. All sites known before 1995 were protected. A number of species were found that had not been found here before.

Recommendations Include:

Continue monitoring as scheduled.

I. TIMBER OFFERED, HARVESTED, AND RELATED SILVICULTURAL ACTIVITIES

Monitoring Item-

TIMBER OFFERED (ALLOWABLE SALE QUANTITY (ASQ) AND TIMBER SALE PROGRAM QUANTITY (TSPQ))

The goal is to achieve planned and assumed volumes of timber sold annually and for the planning period in ASQ and TSPQ (USDA Forest Service 1990) for the period from fiscal year 1990 to 1993. From 1994, the goal has been amended by the Northwest Forest Plan. The new term to describe timber offered under the amended Forest Plan is called "probable sale quantity" (PSQ). The objective is to estimate sale levels likely to be achieved (PSQ) as opposed to estimating ceiling or upper-limit harvest levels (ASQ) (USDA Forest Service 1994).

Five Year Review

What has been Learned from Monitoring

The new direction in the Forest Plan is to sell 24.2 million board feet (MMBF) (PSQ) per year. This new direction is being implemented and is being accomplished. The reason why the Forest only met 65.2 percent of the sell target is because of the changes being implemented to amend the Forest Plans on owl forests in the Pacific Northwest. This change brought about legal and administrative changes that prevented the Forest from achieving the original Forest goals. The new process and new targets are now in place and are being implemented.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives. This assumption is based on the new PSQ numbers addressed in the amended Forest Plan. During fiscal year 1994 to 1995, the PSQ sell would be 48.4 MMBF. The Forest sold 70.6 MMBF, but most of the volume sold in 1995 was salvage associated with the 1994 fires that occurred on the Forest (88 percent of the volume was classified salvage). From fiscal year 1990 to 1995, the Forest goal was 592.4 MMBF. The Forest sold 386.4 MMBF; this is 65.2 percent of the goal.

Recommendations Include:

Continue to sell timber as directed in the Forest Plan as amended.

Continue to monitor PSQ utilizing the STARS database and compare volume to projected decade trend, and to assure decade PSQ is not exceeded.

Monitoring Item-

TIMBER HARVEST UNITS (SIZE, SHAPE AND LOCATION)

The goal is to manage vegetation cover to meet direction on size of openings created by National Forest timber harvest. The monitoring question is:

Are the Forest Plan Standard and Guidelines regarding the size and dispersal of openings and condition of adjacent vegetation (e.g. height of trees in adjacent areas) being appropriately implemented?

Five Year Review***What has been Learned from Monitoring***

Size, shape, and location of units continues to be monitored and there appears to be no problem with obtaining Forest goals; the goals within the Forest Plan address the practice of regeneration harvest. The annual average in the first decade for suitable lands has the Forest clearcutting 2,719 acres (based on 10 year plan). From 1990 to 1995, the Forest averaged 1,553 acres per year. This is 57 percent of the planned acreage that was identified in the Forest Plan.

Changes/updates to Forest Monitoring Plan

The need to change the amount of clearcutting is related to the amendment to the Forest Plan. The new PSQ is 17.8 percent of the old ASQ. Based on this, it would be appropriate to assume that 17.8 percent of the 2,719 acres would be a new starting point to monitor the amended Forest Plan for regeneration cuts. That would be 484 acres. The last two years resulted in only 355 acres being clearcut per year. This is well below the target of 484 acres. The size, shape, and location of these openings are within the Standards and Guidelines. The use of clearcutting has declined dramatically on the Forest. The use of all other harvest methods has also declined.

How well is Forest meeting Plan Goals and Objectives

The Forest is doing a good job of meeting its Plan Goals and Objectives. The transition to the amended Forest Plan has been attained. The decrease in harvested acres, along with the shape, size, and location has been accomplished to coincide with the new goals and objectives in the amended Forest Plan.

Recommendations Include:

Continue monitoring as scheduled.

Monitoring Item-

TIMBER HARVEST

The goal is to ensure that regeneration harvests are not prescribed for areas where average annual growth has not generally reached culmination of mean annual increment. Monitoring questions include:

Are stands being harvested at an ages and condition that produces the expected growth measured on an average annual cubic foot basis?

Is the amount of volume removed consistent with amounts sold?

Five Year Review

What has been Learned from Monitoring

The current amount of regeneration harvest is only averaging 355 acres per year (last two years).

Changes/updates in Forest Monitoring Plan

The Forest is doing quite well under the current 5 years plus trend.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives.

Recommendations Include:

Continue monitoring as scheduled.

Monitoring Item-

SILVICULTURAL PRACTICES

The goal is to ensure that silvicultural prescriptions are appropriate, effective and consistent with resource objectives for each management area. Monitoring questions include:

How many acres of each planned silvicultural practices have been accomplished?

Have silvicultural prescriptions met objectives set for each management area?

Are managed stands growing at the rates estimated by Forest Plan yield models?

Five Year Review**What has been Learned from Monitoring**

Growth and yield do not appear to be a problem. The rates estimated in the Forest Vegetation Simulator (FVS) for managed stands are appropriate given the new direction of sustaining ecosystems for late successional and old growth characteristics, and providing habitat for linkage between late-successional reserves.

The amount of acres planned for silvicultural activities within the last 5 years is below average for the Forest Plan. The Forest Plan has 4,200 acres per year identified for Timber Stand Improvements and the Forest has accomplished 2,880 acres per year, which is 68.6 percent of the Forest Plan. Reforestation is 4,300 acres per year under the Forest Plan. The acres reforested since 1990 has been 5,315 acres per year. This is 123.6 percent of the Forest Plan goal. Acres harvested in the Forest Plan are 8,410 acres per year. The Forest harvested an average of 5,992 acres per year from 1990 to 1995. This is 71.3 percent of the goal.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The reduction in acres for Timber Stand Improvements is appropriate. The last two years resulted in 1,614 acres being treated. With the reduction in timber harvesting, it would be appropriate to see a reduction in TSI acres treated. The acres being planted is higher because of the large stand replacing fires that the Forest experienced in 1994. The acres harvested has gone down dramatically. This is appropriate considering the reduction in timber harvested under the amended Forest Plan. The Forest had 2,111 acres harvested per year during the last two years. If the volume removed from each acre is assumed to be equal to the original acres planned, then it would be appropriate to assume that under the amended plan the new harvest acreage would be 1,496 acres. The current trend indicates that the reduction in harvest acres will be close to the 1,496 acre goal. Considering the reduced use of clearcutting, the acres harvested per year will probably be higher than 1,496 acres. The Forest is meeting the 5 year goal.

Recommendations Include:

Continue monitoring as scheduled.

Monitoring Item-

REFORESTATION

The goal is to minimize the amount of time between the removal of existing trees and reforestation with desired species. Monitoring questions include:

Is adequate tree stocking for each management area achieved within the time frame established with the desired silvicultural method?

Have adequate numbers of trees of desired species been established to realize optimum growth for management area?

Five Year Review

What has been Learned from Monitoring

The Forest has been reforesting harvest units and areas burned by stand replacing fires within 3 years or less on 90 percent of the acres. The last report for the Status of Reforestation after final harvest for FY 1994 indicates that 4,530 acres were adequately stocked and only 117 were not; this indicates that 97.5 percent are adequately stocked.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives for the 5 year period.

Recommendations Include:

Continue monitoring as scheduled.

Monitoring Item-

LANDS NOT SUITABLE FOR TIMBER MANAGEMENT

The goal is to verify that technology and /or other information has not been developed to justify reclassifying lands from a "not suitable" status to "suited for timber management", or vice versa. Monitoring questions include:

Have the lands that were identified in the Plan as not suitable for timber management now become suitable for timber management?

Is the suitable/not suitable land classification accurate as identified in the Forest Plan database?

Five Year Review**What has been Learned from Monitoring**

Suitability is being monitored at the District level by the silviculturist. There appear to be no problems with identifying acres that do not meet the Forest Standards and Guidelines. Any new changes are being included in updates in the GIS database. Reforestation difficulties still tend to be the limiting factor. The Forest continues to utilize genetically improved regeneration stock to reforest acres harvested or burned. The improved stock has helped to improve survival and has improved first time success.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest has met its Plan Goals and Objectives for the last 5 years.

Recommendations Include:

Continue monitoring as scheduled.

**J. SOIL, WATER, FISHERIES AND
RELATED WATERSHED MANAGEMENT**

Monitoring Item-

MAINTENANCE OF LONG-TERM SOIL PRODUCTIVITY

The goal is to manage the soil resources by implementing management practices that maintain or enhance productive soil nutrient and water cycles. The monitoring question is:

Is soil productivity being protected?

The Wenatchee NF has been monitoring the effects of timber harvest activities on detrimental soil disturbance for many years. Since 1991, effectiveness monitoring has been conducted to meet the objectives of the Forest Plan. In 1991, detrimental soil disturbance monitoring was completed by using soil tile spades to detect detrimental disturbance. In order to acquire more accurate information, core sampling using the regional protocol was used from 1992 through 1995. A total of 18 timber sale units were sampled during this time frame.

Five Year Review**What has been Learned from Monitoring**

In 1992 the monitoring objective was to determine if the Forest had a serious problem with detrimental soil disturbance. Seven timber sale units on four Districts were selected for sampling. These units had obvious visual disturbance and appeared

to be poor examples of ground based logging operations. These units were selected with the idea that if they did not exceed the Forest Plan Standards, then likely the Wenatchee NF did not have a problem with detrimental soil disturbance. Units monitored were first entry clear cuts.

In 1993 the monitoring objective was to select the "best" examples of ground based logging operations to determine the magnitude of the detrimental soil disturbance concerns. The four harvest units were selected from four different timber sales on two Districts. These units did not have visual effects of detrimental soil disturbance. Units monitored were first entry clear cuts.

In 1995 the monitoring objective was to sample timber sale units that have had multiple timber harvest activities since 1920s. Seven timber sale units on two Ranger Districts were sampled. This monitoring would enable the Forest to determine the effect of past harvest activities on detrimental soil disturbance.

The effectiveness monitoring has indicated that almost all of the ground based logging operations sampled did not meet Forest Plan Standards. One timber sale unit did meet the Detrimental Soil Disturbance Standards. Even the best examples of ground based harvest units sampled in 1993 did not meet Standards. The soil disturbance monitoring relates to logging and slash treatment technology that is currently being used on the Wenatchee National Forest. New technology was not sampled because it has not been widely used on the Forest. The types of treatments sampled were tractor skidding (track and rubber tire) and Feller Buncher. Two obvious conclusions have been identified: (1) the cumulative effect of timber harvest and mechanical slash treatment in a single entry will likely result in detrimental soil disturbance, and (2) multiple timber harvest entries can cause detrimental disturbance.

Changes/updates in Forest Monitoring Plan

The Forest developed a Forest Policy directed at identifying ground based harvest practices that should meet long term ecological desired conditions. This policy will include rehabilitation measures to set up conditions where soils within timber sale harvest units will make significant progress toward properly functioning condition, and continued monitoring to refine ground based harvest strategies.

How well is Forest meeting Plan Goals and Objectives

The current level of monitoring ground based harvest activities is adequate to enable the Forest to meet 10 year goals and objectives. A Forest Policy dealing with ground based harvest practices and detrimental soil disturbance will also enable the Forest to resolve emerging issues. This policy should include flexibility to implement new harvest technology designed to reduce the degree of detrimental soil disturbance. Continued monitoring of new harvest technology will enable the Forest to refine and develop harvest strategies. The current Plan is adequate to address detrimental soil disturbance monitoring.

Recommendations Include:

Discontinue the combined practice of ground based timber harvest and mechanical slash treatment.

Utilize timber sale contract provisions to limit and designate skid trails.

Continue monitoring ground based harvest operations to see if Forest Plan Standards are met.

Restore sites that do not meet Forest Plan Standards and avoid practices that will cause further degradation.

Develop a Forest Policy dealing with ground based harvest practices that incorporates detrimental soil disturbance concerns (completed 6/28/96).

Monitoring Item -

FISH/RIPARIAN STANDARD AND GUIDELINE IMPLEMENTATION

Are Standards, Guidelines and Related BMPs for fish habitat and riparian areas as defined in the Forest Plan (and Northwest Forest Plan) being applied in the design and execution of timber sales, watershed restoration, and other projects where fish/riparian Standards are a concern?

Five Year Review**What has been Learned from Monitoring**

Implementation monitoring was emphasized in 1992 and 1993 to determine if Forest Standards and Guidelines for water quality, fish and riparian habitat were implemented consistently across the Forest. In 1992, The Forest Fisheries Biologist and Hydrologist reviewed fishery and watershed input to NEPA documents to determine if the input met analysis steps outlined in the Forest Plan Water and Riparian Standards and Guidelines. The Districts reviewed a minimum of two projects, from NEPA documentation through implementation. The reviews addressed the following questions:

Were Riparian Standards and water quality objectives addressed in accordance with the Wenatchee National Forest Land and Resource Management Plan?

Were site specific BMPs identified?

Were the BMPs implemented?

Did the BMPs appear to be effective?

Additionally, the Forest Fisheries Biologist and Hydrologist scheduled trips to review the District monitoring efforts. A total of 13 timber sales, one new campground construction project, and one lake rehabilitation project were reviewed. Findings of the monitoring in 1992 showed that fisheries and watershed personnel on the Forest appeared to be consistent in interpreting Forest Plan direction and in assessing effects of implemented projects. In several cases, project planning was deficient in identifying riparian management objectives and site specific BMPs as required by Forest Plan Standards.

In anticipation of the completion of the Northwest Forest Plan in 1993, the National Forests within the range of the northern spotted owl were directed by the Regional Office to review timber sales in various stages of preparation. The review was to address the question "Would these sales meet the draft standards and guides being proposed in the Draft Northwest Forest Plan?". The Forest added an additional question "Did these same sales meet current Wenatchee National Forest Plan Standards and Guides?".

Nineteen timber sales were reviewed. All the sales received an office review which included the NEPA file, analysis file, and contract package. This review basically addressed the questions in the previously discussed implementation monitoring. Field reviews were completed on 13 of the 19 timber sales. Modifications were made to five sales, three were modified for compliance with the draft Northwest Forest Plan. Two of the sales received major modifications which, if not corrected, would probably have resulted in non-compliance with Forest Plan Standards for soil displacement, erosion and water quality. The modifications included deletion of some units, changes in unit boundaries, and changes in road design or location.

Findings of the 1993 implementation monitoring showed that most sales were meeting intentions of the Forest Plan. Some projects did not establish riparian management objectives as directed by the Forest Plan. In several cases, riparian buffers were judged to be insufficient, especially for the burning and slash disposal purposes. Road recommendations included additional erosion control features and use restrictions.

Changes/updates to Forest Monitoring Report

Over the last few years three areas were specifically targeted for monitoring as part of the Salmon Summit Agreement: (1) Grazing Management, (2) Mining Activities, and (3) Diversion Screening and Man-Made Barriers.

Grazing Management

Please see the Range Management section in this report.

Mining Activities

The majority of mining activities on the Forest are in the Swauk and Peshastin Creek drainages, where numerous small claims are located. Beginning in 1993 and

again in 1994, Districts monitored mining operations to determine if they were being implemented within the operating plans. In 1993, 66 operations were monitored and in 1994, 17 claims were monitored. Of the 66 mining operations assessed in 1993, 17 (26 percent) were not in compliance in some manner. Violations ranged from a backhoe needing a spark arrestor, to inadequate reclamation bond and erosion from mining sites (note by far the vast majority of operations are small scale suction-dredge operations). Six of the observed problems involved erosion control or stream protection measures. During the limited amount of monitoring conducted in 1994, one had an erosion control problem but was not a direct threat to any stream; and two operations were not adequately protecting streams as people were living in the riparian area. All but one of the violations were remedied in a short time. Legal action was required before the last riparian occupancy was corrected.

It appears that most operators are within the terms of the operating plans therefore no further formal monitoring of mining activities was conducted in 1995 and none is planned for 1996, other than normal administration of permits. A bigger question though, is whether current State regulations are adequate for small placer operations. A partial answer to this question may emerge from the Swauk and Peshastin Watershed Analyses being prepared.

Diversion Screening and Man-Made Barriers

The Forest completed an inventory of diversions in early 1992 and none were found to require screening (as reported in earlier monitoring reports). The vast majority of diversions are downstream of the National Forest Boundary. No further monitoring is planned at this time.

How well is Forest meeting Plan Goal and Objectives

The implementation monitoring in 1992 and 1993 was deemed to be extremely useful. Implementation monitoring was planned for 1994 but due to the extreme fires on the Wenatchee National Forest no formal implementation was completed. The Naches Watershed restoration monitoring was the only formal implementation monitoring completed in 1995. It should be noted that some level of implementation monitoring is constantly occurring through document and project review by District and Supervisor's Office personnel and project administration. Formal monitoring though allows the Forest to better critique management and determine if changes are needed.

Recommendations Include:

It is recommended that implementation monitoring at some level be conducted and reported annually. In 1996, the monitoring will focus on burn area rehabilitation and assessment of watershed restoration efforts in light of the 1995 and 1996 floods. It is also recommended that monitoring in 1997 be

focused on implementation of the fire salvage sale program with emphasis on compliance with the Northwest Forest Plan Aquatic Conservation Strategy.

Monitoring Item -

EFFECTIVENESS OF RIPARIAN STANDARDS AND GUIDELINES

*Are Standards and Guidelines that describe
Desired Future Conditions for specific riparian
areas/fish habitat being met?*

Measurable Standards for aquatic and riparian habitat structure and function were established in the Wenatchee Plan. The Standards are to be used as a method to measure attainment of Forest Plan Goals and Objectives for aquatic and riparian habitat. With the adoption of the Northwest Forest Plan these same Standards could be viewed as a method of measuring attainment of the Aquatic Conservation Strategy.

The Wenatchee National Forest Plan Standards and Guidelines for stream structure and function are as follows: For large woody debris the Standard for fish-bearing streams is to have a minimum of 100 pieces per mile of stream with at least 20% of those being > 50 feet in length and > 20 inches in diameter. The small size woody debris needs to be > 50 feet in length and > 12 inches in diameter. The Pool Standards are as follows: For fish-bearing streams with a gradient less than three percent, one primary pool per six bankfull channel widths; in fish-bearing streams with a gradient > three percent one primary pool per three bankfull channel widths. A primary pool occupies > 50 percent of the low flow channel width and has a maximum low flow depth of > three feet. In non fish-bearing, class III streams there is no depth requirement for the pools and in class IV streams there is no numeric pool standard. Fine Sediment Standards call for < 20% fine sediment < 1.0mm in diameter in spawning gravels in Forest streams. The water temperature standard for class I, class II and fish-bearing class III streams calls for a maximum daily temperature < 61 F and an average 7-day maximum < 58 F.

The Wenatchee has implemented an annual stream survey, sediment, and water temperature monitoring program. The following summarizes the results of the three programs.

Five Year Review

What has been Learned from Monitoring

Stream Surveys

Between 1989 and 1995, the Forest has completed stream surveys using the standard Region 6 stream survey protocol on over 1,000 miles of stream. The stream survey information is used to determine if individual stream reaches are meeting Standards for pools and in-channel large woody debris. The following is a summary of the compliance of the streams surveyed in 1993 on the Wenatchee National Forest with the Forest Plan Standards and Guidelines (wood and pools only). A more complete analysis of all stream survey data to date is currently being compiled.

Large Wood

Thirty-four percent of stream miles met the small size standard, 54 percent met the large size standard and 30 percent met the combined wood standard.

Pools

None of the stream miles surveyed in 1993 met the pool standard when the 3 foot depth requirement was considered. Removing the depth requirement results in 6 percent compliance.

Fine Sediment

Monitoring fine sediment levels in spawning gravels began with a few streams in 1990 and has increased to 84 sampled reaches, although some reaches were sampled only once. Most of the monitoring has occurred in the Yakima River Basin with efforts expanding to the Wenatchee and Entiat subbasins in recent years. The monitoring has shown that there are a number of streams on the Forest currently exceeding the Forest Plan fine sediment standard. Overall, the trend for 1995 was for an increase in fine sediment as measured in the sampled reaches. The sampled reaches though are not necessarily indicative of "Forest-wide" conditions as sampling has tended to concentrate on "problem" areas.

Little information is available from "baseline" streams so it is difficult to determine how trends in fine sediment are related to natural processes or human disturbance. Generally, the highest fine sediment levels have been found in streams which flow within landforms that would be expected to be more likely to produce fine sediment. The lowest fine sediment levels have been observed in stream reaches least impacted by ground disturbing activities. Regardless of the causes, monitoring shows that existing fine sediment levels are a concern in some stream reaches and are exceeding the Forest standard in others. Activities which will tend to increase fine sediment deposition in these streams would not be consistent with the Aquatic Conservation Strategy, especially in Key Watersheds, unless concurrent restoration occurs which would be expected to reduce overall sediment delivery to the system. In fact much of the watershed restoration completed to date has been in these "problem" watersheds. Stream reaches exceeding Standards are found in the mainstem Entiat; Kahler Creek, the lower White River (glacial flour may be a factor), Peshastin Creek, Tronsen Creek, and Mission Creek in the Wenatchee Subbasin; Cabin Creek, Little Creek, West Fork Teanaway, North Fork Manastash, South Fork Manastash, Taneum and North Fork Taneum in the Upper Yakima Subbasin; and Pyramid Creek in the Naches Subbasin.

Stream Temperature

The Forest has been monitoring stream temperatures since 1990. The following is a summary of the thermograph data.

SOIL, WATER, FISHERIES, WATERSHED MANAGEMENT

Year	# streams exceeding standard/ #streams sampled	# stream days exceeding daily max	# stream days exceeding average 7 day max	# stream days sampled
1990	3/3 (100%)	36	64	445
1991	9/12 (75%)	153	318	2065
1992	10/11 (100%)	351	478	3492
1993	13/17 (76%)	264	472	1863
1994	24/26 (92%)	1192	1872	4382
1995	30/57 (53%)	540	1143	5470

Stream temperatures, as would be expected, appear to be influenced by flow and air temperatures. For five of the streams that have been monitored for temperature annually since 1991, 1995 (a relatively good streamflow year) had the lowest median days exceeding the temperature standard. The greatest number of days exceeding the Standards were in 1992 and 1994, relatively warm years with relatively low streamflows.

A number of streams, especially mainstem tributaries, exceed temperature Standards for some period during the summer. Management therefore needs to avoid activities which may cause an increase in stream temperature unless watershed analysis and subsequent NEPA documentation show such activity will meet the Aquatic Conservation Strategy and be in compliance with Standards.

Based on the available data, the most severe temperature problems on the Forest occur in: the Bumping River, the Little Naches River, Mission Creek, Peshastin Creek, Nason Creek, Swauk Creek and the Middle and West Fork Teanaway.

Changes/updates in Forest Monitoring Plan***Stream Surveys, Large Wood, Pools***

The current Forest Standards for stream channel conditions represent a "one-size-fits-all" minimum threshold. The Standards are generally applied at a stream reach level. The use of threshold Standards has been questioned in the literature. Watersheds and stream channel conditions are dynamic. Habitat descriptions need to be used in the context of the conditions within the watershed and how habitat is affected by disturbance processes. Even if an absolute threshold could be identified (below which the aquatic system is not functioning properly) by the time the threshold is reached most damage to watershed and stream processes has probably occurred. Using the stream inventory data the Forest has been reevaluating these "threshold" Standards to determine if single-value thresholds can be replaced with descriptions of potential natural variability in stream habitat and understanding the processes "driving" habitat conditions in watersheds.

The Forest is examining the stream inventory data, primarily large wood and pools, to determine if any patterns emerge from the data and how they may relate to parameters such as landtype, climate, vegetation and road density. Early results

indicate that variability in mean levels of large wood can be reduced by about 30 percent if the data is stratified by subsection (a geomorphic landscape parameter) and climax vegetation. Climax vegetation, amount of large wood, subsection and stream gradient account for about 17 percent of the variation in pool frequencies. To describe what "natural" stream conditions may look like or how past management may have influenced stream habitat the data was analyzed against road density (as a surrogate for human disturbance). Road density appears to account for significant differences in mean pool frequency and mean large wood frequency.

The Forest is exploring an approach to move away from threshold Standards to using a range of conditions one would expect to observe in properly functioning watersheds. These ranges of conditions could possibly be used as a diagnostic of habitat conditions within different types of watersheds. Through watershed analysis it may be possible to link channel conditions to watershed processes, including the role of disturbance.

In addition to the stream surveys utilizing the Region 6 Stream Inventory protocol, the Forest has established 404 monumented stream survey cross sections on 22 stream reaches. The reaches are located in a variety of stream and land types. These hydrologic surveys are being used to develop streamflow information for ungauged watersheds and provide long term monitoring locations to document changes in stream channels. The data analysis is continuing with an initial completion expected before June 1996. The hydrologic surveys have been incorporated into watershed analysis and the surveys are linked to a riparian disturbance ecology study by the Wenatchee Forestry Sciences Laboratory.

How well is Forest meeting Plan Goals and Objectives

Please refer to above narratives for more on this information.

Recommendations Include:

Stream Surveys, Large Wood, Pools

Continue stream surveys using the Region 6 stream survey protocol as a on-going inventory/monitoring program. Attempt to link stream survey results to watershed processes. In 1996, surveys will focus on resurveying streams influenced by the floods of Fall 1995 and late Winter 1996 to determine if and how habitat conditions changed; survey of streams in unroaded or lightly managed systems to help determine if expected habitat condition patterns can be determined for different channel types within different landtypes; support future watershed analysis.

Resurvey monumented hydrologic cross section surveys to determine changes due to the floods. The information in combination with stream surveys, and flood response monitoring in upslopes (see Implementation Monitoring) should assist in understanding watershed processes.

Fine Sediment

The current analysis methodology consists of calculating a 95 percent or 80 percent confidence around the sample mean. If that confidence interval is entirely beyond the standard then the reach is judged to have exceeded the standard. Two possible proposals are made for comparing sampled reaches to the Forest Plan standard. The first proposed change would be to use the sample mean itself instead of a confidence interval. If the mean is greater than the standard then the sample is judged to have exceeded the standard.

The second proposed change would be to identify a possible standard exceedence when the confidence interval exceeds 20 percent. In such a case there is the possibility that the population mean is greater than 20 percent.

These two proposed changes would work something like the following:

The reach mean is below 20%, but the confidence interval extends above 20% - the reach has possibly exceeded the standard; the reach mean is above 20% but the confidence interval dips below 20% - the reach has exceeded the standard; the reach mean is above 20% and the confidence interval does not include 20% - the reach has exceeded the standard (current approach). The proposed approach would be more conservative from an aquatic resource standpoint and is probably warranted in key watersheds, and streams inhabited by Threatened, Endangered or Candidate aquatic species. The proposal is discussed in more detail in the "1995 Sediment Monitoring Report".

Investigate differences in fine sediment amounts and trends in managed and relatively unmanaged watersheds of different landtypes. We will attempt to expand the network in 1996.

Focus watershed restoration on those watersheds, especially within key watersheds or watersheds containing Candidate, Threatened or Endangered aquatic species where fine sediment exceeds the Standards or are above a 15% "yellow light" with increasing trends.

Continue monitoring and expand monitoring network. Possibly after a 5 year trend is established monitor some reaches in alternate years so more streams can be sampled with the present level of effort. This proposal will be discussed at our annual monitoring meeting with the Yakama Indian Nation.

Include a .85mm sieve in all sample processing so that that level of fines can be assessed and compared to Department of Natural Resources and Yakama Indian Nation results.

Stream Temperature

The temperature data needs to be examined further; we are currently exploring ways to extract more information from the existing data but further analysis will not occur until FY 1997. For 1996, temperature monitoring will focus on streams with long term (relatively) data (more than two years).

Monitoring Item -

FISH MANAGEMENT INDICATOR SPECIES (MIS) POPULATIONS

Are viable populations of Management Indicator Species (MIS) being maintained?

Fish chosen to be MIS on the Wenatchee National Forest are anadromous salmonids, bull trout, and cutthroat trout. Portions of five subbasins lie within the boundaries of the Forest; the Naches and Upper Yakima within the Yakima River Basin, the Wenatchee, Entiat and Chelan. Anadromous fish are native to all but the Chelan. Spring chinook salmon and steelhead trout are found in the Naches and Upper Yakima; spring and summer chinook, sockeye salmon and steelhead are found in the Wenatchee; and spring and summer chinook, some sockeye salmon and steelhead inhabit the Entiat. The Forest has not been actively monitoring anadromous fish returns due to established monitoring programs at mainstem Columbia River dams; Yakama Indian Nation spawning surveys in the Yakama River Basin; and Chelan County PUD spawning surveys in the Wenatchee and Entiat Rivers.

Five Year Review

What has been Learned from Monitoring

Spring Chinook Salmon

All spring chinook stocks on the Forest are considered to be depressed and returns to the Entiat and Wenatchee systems were the lowest on record.

Yakima River Spring Chinook Redd Counts 1990-1995

	1990	1991	1992	1993	1994	1995
Naches Subbasin	464	460	425	554	272	104
Upper Yakima Subbasin	773	630	1246	656	290	117

(Data provided by Lee Carlson, Yakama Indian Nation)

**Spring Chinook Redd Surveys
Wenatchee and Entiat Subbasins 1990-1995**

	1990	1991	1992	1993	1994	1995
Wenatchee Subbasin	446	251	491	536	125	23
Entiat Subbasin	83	32	42	100	24	1

(Entiat Subbasin data from Table 1 in "Spring and Summer Chinook salmon and Sockeye Salmon Spawning Ground Surveys on the Entiat River, 1995. U.S. Fish and Wildlife Service, Mid-Columbia Fisheries Resource Office. Leavenworth Wa. David Carie, author.) Wenatchee Subbasin Data from "Spring and Summer Chinook Spawning Ground Surveys on the Wenatchee River Basin, 1995. Chelan County PUD. Wenatchee, Wa. Peven and Mosey authors; and "Status of Spring Chinook Salmon in the Mid-Columbia Region". 1995. Chapman and others. Don Chapman Consultants, Inc. Boise Idaho. Data includes redd counts less Icicle River counts.

Based on the above information, the status of spring chinook within the subbasins is disturbing to the point that the continued existence of the runs other than the hatchery stocks is a concern. The status of the Wenatchee and Entiat stocks appears critical. There is some information that over the last several years spawner-to-recruitment ratios have been below necessary to perpetuate the runs (Larry LaVoy, WDFW personnel communication). The cause of the recent slide is not known, but diminishing returns within other portions in the Columbia Basin point to possible changes in mainstem and/or ocean conditions as well as any factors affecting the runs in their natal subbasins.

Summer Chinook Salmon

Naturally spawning summer chinook salmon are found in the Entiat and Wenatchee subbasins. Summer chinook returns to the Entiat have been sporadic since redd surveys have been conducted beginning in 1957, ranging from 0 redds counted to 55, with an average count of 13 during the period of 1957 to 1991. No formal redd surveys were conducted after 1991 until 1995 when personnel from the U.S. Fish and Wildlife Service Mid-Columbia Fisheries Resource Office in Leavenworth, Washington conducted redd surveys. A total 46 redds were observed. While no formal redd surveys were conducted between 1992 and 1994, summer chinook were observed spawning in the Entiat during those years.

Summer chinook returns were down in the Wenatchee the last two years but returns appear to be within population fluctuations observed since monitoring was commenced. The interesting trend with summer chinook is not so much a change in total numbers but an increase in the numbers of fish spawning in the Leavenworth area and upstream.

Wenatchee River Summer Chinook Redd Surveys 1990-1995

	1990	1991	1993	1994	1995
Redd Count	2479	2180	2334	2426	1872

(Data from Appendix A4 in Peven. Charles and T.R. Mosey. Spring and summer chinook spawning ground surveys on the Wenatchee River Basin, 1995. Chelan County Public Utility District. Wenatchee, WA. January 1996)

Sockeye Salmon

The Wenatchee River supports one of the last two sockeye salmon populations in the Columbia River. Annual returns to the Wenatchee can be highly variable possibly reflecting ocean conditions. Sockeye salmon returns to the Wenatchee River averages about 30,000 adults. In 1993 the adult return was about 37,000 fish, while in 1994 the return was down to a little over 9,000 (Larry LaVoy, WDFW personnel communication). The 1995 return was even worse than 1994. Using numbers from the Fish Passage Center and subtracting sockeye counts over Rock Island Dam from Rocky Reach only 4,476 adult sockeye would be estimated to have escaped to the Wenatchee system. Ocean conditions are thought to be a major factor in the observed sockeye population fluctuations. The severe drop in sockeye the last two years will result in a heightened level of concern for the stock if returns do not rebound.

Summer Steelhead

Summer steelhead populations on the Forest are a mix of naturally spawning and hatchery fish. All stocks on the Forest are considered to be depressed and low numbers of naturally produced returning adults is a concern. The returns to the Wenatchee drainage are displayed below.

Wenatchee River Summer Steelhead Escapement Return Years 1990/91-1994/95

Return Year	90/91	91/92	92/93	93/94	94/95
Hatchery	1174	2,037	3,722	1,381	2,065
Wild	608	937	816	517	625
Total	1,782	2,974	4,538	1,892	2,690

(Data provided by Larry LaVoy, WDFW)

Bull Trout

Bull trout are considered a Candidate species by the U.S. Fish and Wildlife Service (listing under the Endangered Species Act is warranted but precluded because of other species management priorities). Bull trout are found in all subbasins on the Forest except the Chelan. Historically bull trout did inhabit the Chelan Subbasin but are now thought to be extinct.

The Forest contracted with WDFW to develop a Draft Species Management Guide for bull trout on the Forest. That document was completed in 1992. A final species management guide was never completed because at the time it was thought that a Forest Plan amendment/revision was eminent to address spotted owl issues. The Draft Management Guide for bull trout would then be incorporated into any revision/amendment. The amendment eventually did happen in the form of the Northwest Forest Plan. Aspects of the Draft Management Guide have been implemented though, including the monitoring program.

The Wenatchee NF and WDFW have been cooperatively monitoring bull trout since 1989. Redd surveys using a standardized protocol have been conducted annually on nine "index" streams or reaches of streams. A tenth stream was added in 1993. The monitoring focuses on migratory populations, either fluvial (adults ascend a tributary stream from a larger stream for spawning, the juveniles rear initially in the tributary before returning to the larger stream) or adfluvial (adults migrate from a lake to tributary streams to spawn).

Total Bull Trout Redds on the Wenatchee National Forest

Year	1989	1990	1991	1992	1993	1994	1995
Redd Count	283	217	622	536	485	490	766

More redds were counted on the Forest in 1995 than in any previous year. Forest-wide trends are not as meaningful as population changes observed in individual populations. Within the short timeframe monitoring has taken place there are no clear trends in the populations other than in one stream; Indian Creek in the Tieton River drainage definitely displays an upward trend. The other streams display annual fluctuations in returning adults.

Streams in the Chiwawa drainage saw dramatic increases in spawning activity in 1995, while in Panther Creek (White River drainage) spawning activity was down. Within the Tieton River, Indian Creek displayed a dramatic increase in redds observed while the South Fork Tieton spawning population appeared to have dropped from the previous year. Deep Creek, a Bumping Lake tributary also increased. The Mad River, Entiat drainage spawning count dropped from 1994 but the numbers were at the average count since monitoring began. Box Canyon Creek, the only known spawning tributary to Kachess Lake dropped but a greater concern for the Box Canyon populations is the low numbers of fish in all years. The highest

number of redds counted thus far was only 11 in 1994. A similar concern exists for Gold Creek, the only known spawning tributary to Keechelus Lake. Although the redd count only decreased slightly from 1994, the greatest number of redds observed since monitoring began was 21 in 1988 (Gold Creek has been monitored by Washington Department of Fish and Wildlife since 1985).

Isolation and low numbers are potential problems facing bull trout populations on the Forest. Only in the upper Wenatchee River, including the Chiwawa River system does there appear to be somewhat strong local populations that are "connected" to each other. These local populations are probably part of a larger metapopulation that may include Lake Wenatchee and possibly the upper Wenatchee River. Migrating bull trout have been documented in the Chelan County PUD weir near the confluence of the Chiwawa with the Wenatchee River, suggesting bull trout are migrating up the Chiwawa from the mainstem Wenatchee and/or Lake Wenatchee.

The status of bull trout in the Entiat system is unclear but it may be tenuous. There is only one tributary stream with a known spawning population. Bull trout have been observed spawning in the mainstem Entiat but the status of the mainstem spawning population is not known.

The greatest concern for the continued existence of bull trout is in the Keechelus and Kachess Lakes. These populations are isolated above dams with only one known spawning stream, and in the case of Kachess the numbers of spawners in any year is extremely low. Bull trout in the Tieton system, above Rimrock Lake and in the Bumping above Bumping Lake are also isolated but the Bumping population appears to be larger than in Kachess and Keechelus and in Rimrock Lake there are at least two spawning streams with relatively strong populations.

For more information on bull trout refer to the "1995 Bull Trout Monitoring Report".

Westslope Cutthroat

Other than distribution we have no empirical information on westslope cutthroat trout populations. Westslope cutthroat are widely distributed on the Forest and many populations appear strong. In fact, the current distribution of westslope cutthroat may be greater than the historical due to stocking. The bigger question with the cutthroat populations is the degree that genetic introgression has occurred as the result of a long history of stocking exotic rainbow trout. Recent work being completed by the U.S. Fish and Wildlife Service may shed light on this question. Special management may need to be considered for areas found to have pure westslope in order to maintain the evolutionary legacy of the species.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

Please refer to the above and below discussions.

Recommendations Include:

The status of spring chinook salmon appears very precarious. Management activities in spring chinook watersheds need to consider the extremely depressed nature of the populations.

Continue monitoring all bull trout index streams. Establishing long term trends will not only assist with assessing the status of the local populations but provide an index of conditions within the larger system affecting the metapopulation. This information may be useful in interpreting trends in other populations. For example, bull trout populations sharing stream systems with spring chinook salmon populations on the Forest are not exhibiting the same recent downward population declines; possibly indicating substantial factor(s) affecting the salmon are occurring off Forest. Spawning surveys on the index streams are planned to be completed annually.

Better define bull trout distribution and status on the Forest. Although we have a fairly good idea of distribution and status on much of the Forest there are some "holes". Priority streams are the American River; Teanaway River system, especially the North Fork and Middle Fork; Cle Elum River upstream of Lake Cle Elum including the Waptus; mainstem Entiat River; tributaries to Bumping, Keechelus and Kachess Lakes. These streams are programmed for systematic surveys in 1996.

The conservation of bull trout needs to be a high priority in the Mad, Chiwawa, Deep Creek, South Fork Tieton and Indian Creeks as these are important core habitats. Conservation and active restoration need to be priorities for management in the Box Canyon and Gold Creek watersheds as bull trout populations in these watersheds may be particularly "at risk".

Work with Fish and Wildlife Service to better define genetic characteristics of westslope cutthroat trout and redband trout on the Forest. Management of watersheds with "essentially pure" populations should be managed to reduce the risk of exotic introduction and conserve habitat for those populations.

Develop a conservation strategy for native salmonid populations within each subbasin including the location of key subwatersheds within both the Key and "non-key" watersheds. The strategy would build upon the Aquatic Conservation Strategy in the Northwest Forest Plan. A draft strategy should be completed in 1997.

Better define aquatic communities on Forest, especially the distribution and possible status of non-salmonid fish and aquatic mollusks. This work will commence in 1996.

Monitoring Item -

AQUATIC HABITAT OBJECTIVES

Are stream and habitat improvement projects meeting Aquatic habitat objectives as stated in the Forest Plan, Policy Implementation Guide (PIG), and Salmon Summit?

Fish habitat improvement projects traditionally included placement of large wood or boulder structures to create a habitat element felt to be in short supply, fish passage around man-made or natural barriers, and creation of off-channel habitat to compensate for lost side channel habitat.

Five Year Review

What has been Learned from Monitoring

The Wenatchee NF has been changing its philosophy towards habitat improvement projects. In the past, projects were generally based on site or reach specific assessments which did not necessarily reflect priority needs of the watershed as a whole. The focus on future projects should be on restoring the natural watershed and channel processes to provide as naturally functioning watershed as is possible. While in-channel projects may still be implemented to create important habitat conditions in the near term or to assist in the recovery process, most projects should address conditions that are leading to degradation or causing a change in the natural delivery of water, sediment and organic material to stream channels.

Landtype association mapping, which has been completed for the Forest, should help identify important watershed processes. From this mapping the dominant delivery mechanisms for water, sediment and organic material to channels can be identified. Improvement projects can then be designed to return the system to conditions more like those to be expected under the natural disturbance regime. Watershed analysis will help identify the current conditions and, given other ecological and management objectives, identify a desired condition. Improvement projects should then be based on attaining the desired ecological conditions.

Changes/updates in Forest Monitoring Plan

Please refer to the above and below discussions.

How well is Forest meeting Plan Goals and Objectives

It is important to look at past improvement projects to determine how the projects worked in terms of meeting project objectives. Such information can benefit

future project work. Past projects have been monitored in two ways. The first is a cursory overview of projects asking the question; are improvements in place and appear to be meeting habitat/watershed objectives. This first approach is a type of implementation monitoring. The second has been a form of effectiveness monitoring; not only are the projects creating the desired habitat conditions but are the fish or other resource of interest responding as expected?

In 1992, 135 in-channel structures were reviewed for implementation monitoring. Of those, 114 appeared to be functioning as designed, seven were partially functioning and 14 were either washed-out or not functioning as designed. Sixty-six in-channel structures were reviewed in 1995. Forty-nine appeared to be fully meeting objectives, 13 were judged to be partially meeting objectives and four were not meeting objectives. In one case a structure may have actually been contributing to habitat degradation and is going to be removed. Past side channel projects on the Naches Ranger District also appeared to be functioning but winter flooding has damaged at least one. All structures should be reevaluated after the 1995/1996 Fall and Winter floods. Through early fall 1995 it appears that by far most structures were functioning as designed. How well structures fared in the floods will be interesting.

Past passage improvements appear to have been effective. Salmon Falls fishway provided passage around Salmon Falls on the Little Naches River to what is believed to be historical salmon habitat. Salmon have been observed above the falls. The Naches Ranger District has also monitored a number of culverts where improvements were made to allow resident trout passage. The treatments were found to be effective.

The effectiveness of past instream projects for increasing fish production is difficult to assess for a number of reasons. First, unless limiting factors within the watershed have been carefully assessed you don't know if the production "bottleneck" has been addressed. Most past projects have also treated fairly small areas. Attempts have been made to assess the effectiveness of projects on Mission Creek, Nason Creek, and off-channel projects on the Naches Ranger District. The Mission Creek and Nason Creek projects appear to have been effective in that the fish seem to have responded positively to structure placement. Juvenile chinook and rainbow/steelhead as well as other fish species rapidly colonize the created off-channel habitat. These projects have not been evaluated on a watershed basis though so all that can be said is fish appear to have responded positively in the treated areas.

Recommendations Include:

Complete the cursory implementation monitoring of all completed projects to date. Most drainages on the Forest experience a significant flood event in 1995/1996. This monitoring should give an indication of structure longevity.

Complete implementation monitoring of upslope watershed improvement projects to determine if treatments appear to be functioning as designed to meet watershed objectives. This will

be important to design of future watershed restoration projects. Both of these recommendations are scheduled for 1996.

Monitoring Item -

AQUATIC ECOSYSTEMS

Is the ecological health of the aquatic ecosystems recovering or sufficiently maintained to support stable and well-distributed populations of fish species and stocks?

Five Year Review

What has been Learned from Monitoring

This is a difficult monitoring question to answer, incorporating the elements of the preceding monitoring questions. The monitoring program since 1989 has been an attempt to answer this question. For now we can't say we know the answer, but as we continue the monitoring and evaluation the status of aquatic ecosystems may become more clear. Wild stocks of spring chinook and summer steelhead on the Forest are not faring well. This could be an indicator of problems with freshwater habitat. But bull trout inhabiting the same watersheds are not showing the same declines. Factors off the National Forest are likely responsible for much of the observed decline in the spring chinook and summer steelhead populations. Bull trout populations appear somewhat stable around sometimes large annual spawning population fluctuations. It needs to be recognized though, that we have a fairly short period of record. Bull trout distribution is reduced from historic, and some populations appear to have dangerously low numbers. Westslope cutthroat and redband (rainbow) trout appear to be numerous and well distributed. There is some information though that many of these populations may be hybridized with introduced fish. Better information on the distribution and status of fish communities may provide insight into this monitoring question.

Recent information suggests that the large stream systems on the Forest may be recovering from degradation early in the century (see "Ecological Health of River Basins in Forested Regions of Eastern Washington and Oregon", Wissmar and others 1994. PNW-GTR-326). In some cases, such as portions of the Yakima, the improvement is relative as the streams were seriously impacted early in the century.

Changes/updates in Forest Monitoring Plan

Please refer to the preceding monitoring items on fisheries and aquatics for more information on this item.

How well is Forest meeting Plan Goals and Objectives

Stream habitat conditions often are below Forest Plan Standards but whether the conditions are indicative of unhealthy watersheds or the Standards are not

appropriate is not known; this question is being investigated. Fine sediment does appear to be a problem in some streams, indicating delivery amounts and rates may be changed from historic and the conditions in some streams may harmful to native salmonids (and other aquatic species). Further monitoring is needed to determine if management, including restoration efforts, are meeting Aquatic Conservation Strategy objectives.

One measure of ecosystem health may be resiliency, the ability of the system to recover after disturbance. The fires of 1994 and floods of 1995/1996 provided plenty of disturbance; how the systems respond over time should provide an indication of health.

Recommendations Include:

Watershed analysis combined with monitoring information hopefully will provide an answer to this monitoring question. As more watershed analysis are completed we are learning more. With data that has been collected biologist and hydrologist are attempting to link stream channel data to upslope processes, another step in determining health.

K. RANGE MANGEMENT AND RELATED ACTIVITIES

Monitoring Item-

FORAGE UTILIZATION

The goal is to provide opportunities to maintain and/or enhance desired plant communities and other resource values while permitting livestock grazing. The monitoring question is:

Are the forage utilization levels consistent with goals for riparian and upland areas?

The Forest currently has 27 active allotments. According to 1990 range reports these allotments contain approximately 570,000 acres, of which approximately 170,000 acres are suitable for grazing. Most of the suitable rangeland on the Wenatchee NF is woodland with some small meadows, grassland, and riparian areas. Suitable range is defined as "Range accessible to livestock and which can be grazed on a sustained yield basis without damage to the resource". Woodland rangelands on the Wenatchee NF have been going through a fair amount of successional change.

Five Year Review

What has been Learned from Monitoring

The result of the last 5 years of range utilization effectiveness monitoring indicates that the amount of available forage on the Wenatchee National Forest has been slowing declining. This decline in available forage has been validated by field reviews, watershed analysis, and NEPA assessments. Some of the major reasons for this decline are as follows:

- Reduction of timber harvest activities providing transitory forage.
- Successional recovery of areas where timber was previously harvested.
- Successional recovery of historic fire areas.
- Forest encroachment into meadows and grasslands.
- Increased crown closure of woodland range sites.
- Increased elk populations in the south half of the Forest.

Three recent rangeland project decisions help to illustrate this decline in suitable rangeland and forage production. Listed below are the suitable range calculations from three recent NEPA analyses; these are the only three projects that have evaluated suitable rangeland acreage and grazing capacity since 1979.

Allotment	1979 Suitable Range	1995-1996 Suitable Range	% Decline
Union Valley	13,127 acres	7,155 acres	55
Table Mountain	9,640 acres	5,753 acres	40
No. 2 Canyon	680 acres	283 acres	58

Changes/updates in Forest Monitoring Plan

Please refer to discussion below and the following recommendations.

How well is Forest meeting Plan Goals and Objectives

From 1990 through 1995 depending upon budget, 30 percent to 75 percent of the grazing allotments were monitored to determine if grazing utilization was within Forest Plan Standards. Approximately 60 percent of the utilization monitoring transects exceeded Forest Plan Standards. The remaining 40 percent were either at Forest Plan Standards or well below the standard. Administrative actions were taken when Grazing Utilization Standards were exceeded.

Utilization records have indicated that on the Cle Elum and Naches Ranger District that elk grazing is increasing. Monitoring transects indicate that 10 percent to almost 70 percent of available forage was used by elk prior to permitted livestock grazing. This means that in some areas, elk grazing alone has been exceeding Forest Plan Grazing Standards.

Listed below are the administration actions taken with the grazing permittees to gain compliance with Utilization Standards:

- Converted use from cattle to sheep to protect riparian areas.
- Removed livestock early from allotments.
- Closed pastures to grazing to help watershed and range recovery.
- Issued new grazing permits with reduced permitted livestock.
- Issued new grazing permits with reduced season of use.

Constructed improvements to help improve livestock distribution.

Changed sheep bedding practices.

The Wenatchee NF and the WDFW have initiated coordination meetings with the purpose of developing a study plan to analyze forage carrying capacity. Implementing a coordinated plan to determine carrying capacity for elk and permitted livestock will be the first step toward integrated management of grazing allotments. Actions implemented from the result of this assessment should help meet Forest Plan Standards and resolve possible livestock/wildlife issues.

The current level of monitoring of livestock grazing is not adequate to enable the Forest to meet 10 year goals and objectives. The current level of utilization monitoring (wildlife and grazing) is adequate to achieve 10 year goals and objectives for permitted livestock grazing; but it is inadequate to meet the needs of a coordinated plan with the WDFW and Forest Service, and provide a level of allotment inspections to determine condition of range improvements.

Recommendations Include:

Monitoring goals and objectives will need to be developed to address the coordinated plan with the WDFW.

Develop a plan to resolve livestock/wildlife concerns on the Cle Elum and Naches Ranger Districts, coordinate with WDFW and Forest Service to determine forage carrying capacity for livestock and elk , initiate management actions to balance annual forage production with grazing use, and monitor key use areas to evaluate changes in range condition.

Continue to implement utilization monitoring for the active grazing allotments. When NEPA analysis is scheduled, calculate suitable acreage and determine carrying capacity for livestock and wildlife.

Address the livestock/elk issue at annual coordination meetings with the WDFW.

L. ROAD MANAGEMENT

Monitoring Item-

ROAD CONSTRUCTION/RECONSTRUCTION

The goal is to ensure that the transportation system is being constructed/reconstructed to serve the planned resource management objectives at the assumed annual rates. During FY95, 10.3 miles of roads were reconstructed, 5.3 miles of roads converted to trails, and zero miles of roads were constructed.

Five Year Review

What has been Learned from Monitoring

The assumptions that were made in 1990 to predict the miles of road construction were wrong. There has been no net increase in the miles of road on the Forest since 1988. Timber Purchaser Roads are constructed to facilitate logging. The expected level of timber harvest was not achieved and there was no development of the unroaded areas. We do not expect any significant road construction in the next 5 years. Roads and bridges will be reconstructed to maintain access, correct safety concerns, and mitigate environmental effects. Currently there are approximately 5,090 miles of road on the Forest, 9 percent are suitable for passenger car use, 75 percent are suitable for high clearance vehicles, and 16 percent are closed to public access for at least a part of the year. Although individual roads will continue to be obliterated and closed, we expect that the Forest will retain the existing patterns of use.

Changes/updates in Forest Monitoring Plan

In the future we intend to monitor only for any net increase in roads or any significant changes in access as reflected in the current maintenance levels.

How well is Forest meeting Plan Goals and Objectives

Please refer to the above discussion.

Monitoring Item-

ROAD MAINTENANCE

The goal is to ensure that the transportation system is being maintained to the appropriate standard to serve the planned resource management objectives. During FY 1995 1,580 miles of roads were maintained to Standard.

Monitoring Item-

ROADS CLOSED/OBLITERATED

The goal is to determine how much of the transportation system is no longer needed for management activities. Short and long term needs are to be considered. Roads can be closed and placed in Maintenance Level I or obliterated and removed from the transportation system inventory.

The Forest Plan Standard is that unless there is a resource need documented in the project analysis, currently open roads will remain open and newly constructed roads will be closed to public access by vehicle. During FY 1995, 8.6 miles of roads were obliterated.

M. INSECT AND DISEASE

Monitoring Item-

INSECT AND DISEASE CONTROL

The goal is to assure that management practices do not contribute to increases in the incidence of destructive insects and diseases, such as western spruce budworm, tussock moth, pine beetles, dwarf mistletoes, root rots, and others. The monitoring question is:

Are destructive insect and disease organisms remaining below potentially damaging levels following management activities?

A survey was conducted during the summer of 1995 by the Forest Insect and Disease (FID) staff of the Pacific Northwest Region in cooperation with the Washington Department of Natural Resources. Copies of the survey maps were given to the Forest and each Ranger District, along with the technical report "Forest Insect and Disease Conditions, Pacific Northwest Region, 1995".

The survey was conducted from airplanes, and represents current insect conditions across the forested landscapes on the Wenatchee National Forest. The survey indicates that defoliation by western spruce budworm and Douglas-fir tussock moth is at nondetectable levels. Mortality associated with mountain pine beetle was similar to 1994 levels in all species. Western white pine continues to experience tree killing by this insect, in association with white pine blister rust. Western pine beetle appears to be increasing in frequency in overstocked pole and small sawtimber size ponderosa pine stands. This insect will continue to pose a high risk for mortality due to overstocked stands in the dry forest of ponderosa pine, Douglas-fir, and grand fir that exists on the Wenatchee. Fir engraver beetle damage appears to have increased slightly from 1994 levels. Most damage is associated with root diseases.

A study was begun in 1994 to measure the effects of insects and fungi in altering the wood of trees killed in the 1994 fires. Seven tree species are being studied. A first year progress report was produced documenting the changes that are taking place. Wood borers have attacked large numbers of fire killed trees.

Five Year Review

What has been Learned from Monitoring

There have been no large increases in the occurrences of visible tree damage caused by insects and diseases for the period 1991 through 1996 on the Wenatchee compared to 1986 through 1990.

The period 1986 through 1990 the Wenatchee experienced western spruce budworm defoliation on the Naches District. A suppression project was done around Rimrock Lake. There has been almost no spruce budworm defoliation recorded on the Wenatchee from 1991 through 1996. The fir engraver contributed to killing of true fir species, especially grand fir, in a large number of stands in the late 1980s as

the trees suffered from drought. The number of patches of true firs killed by fir engravers has declined substantially as moisture conditions returned to more normal levels. Ponderosa pine mortality caused primarily by western pine beetle increased somewhat in pole-sized stands of high densities.

The incidence of dwarf mistletoe is high in Douglas-fir stands throughout the Wenatchee National Forest. Ponderosa pine, lodgepole pine, larch, and hemlock dwarf mistletoes are locally severe but are not significantly increasing the areas affected.

Natural stands of western white pine continue to be depleted by white pine blister rust and mountain pine beetles. Whitebark pine on the Wenatchee does not appear to be experiencing the high amounts of mortality being reported for this species in the Rocky Mountains.

Root diseases are common in Douglas-fir and grand fir stands with a history of harvesting. These disease are slowly spreading and killing trees. The incidence and acreage affected has not changed appreciably from the previous 5 year period.

Changes/updates to Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives for *Insect and Disease*.

Recommendations Include:

Additional study and information is needed before action is taken.

N. FOREST FIRE PROTECTION

Monitoring Item -

FOREST FIRE PROTECTION

The goal is to provide protection from wildfire for Forest users, facilities and Forest resources in an efficient manner. The monitoring questions include:

Are implemented fire suppression strategies adequately protecting the public, facilities and forest resources?

Are costs of protection in line with those projected by the National Fire Management Analysis System?

The fire season for 1995 was affected by wetter than normal weather patterns in the spring and summer. The winter of 1994-1995 was characterized by heavy snowfalls in December, which continued throughout the winter. The heavy snowpack and abundance of precipitation played a major role in slowing the 1995 fire season.

The first two lightning fires occurred on April 24. Fire activity remained light until the lightning storm of July 17 which produced 14 fires on the south end of the Forest. Activity continued to be light for the remainder of July and August. On the evening of September 3, another lightning storm produced 29 fires, the largest of which was the Prince Creek fire which burned 596 acres. Two Incident Management Teams (a Type I and a Type II) were utilized in the suppression efforts in September.

For the year, the Forest had 110 fires. Lightning accounted for 51 fires and the remaining 59 were human caused. Total National Forest acres burned equaled 869 acres.

Emphasis was placed on developing and maintaining interagency programs to improve the efficiency of our Fire Management Program. The Forest continued to participate in the Central Washington Interagency Communication Center (CWICC), to staff fire suppression engines, and to develop Incident Management Teams in partnership with the State of Washington Department of Natural Resources.

The Forest hosted several national fire suppression resources. These included an Interagency Hotshot Crew based at the Entiat Ranger District, a helicopter crew with rappelling capability and a medium helicopter and module based at the Chelan Ranger District. Two large air tankers and one lead plane and pilot were stationed at the Wenatchee Tanker Base at the Pangborn facility.

In 1995, we emphasized safety both in training and daily work activities. Managers organized for this fire season by providing advanced training and encouraging employees to participate on Type I and Type II Incident Management Teams. All employees available for fire suppression received appropriate initial attack training. Many of these employees attended the Interagency Firefighter training at Camp Chaparral.

In addition to the fire suppression program, we continued to emphasize fire detection and prevention as important components of the Fire Management Program. The number of fires caused by escaped campfires rose to 32 this year and additional prevention actions are warranted.

Five Year Review

Please refer to 5 year review discussion under *Use of Prescribed Fire*.

Recommendations Include:

Continue to monitor the effectiveness of the fire prevention program.

Monitoring Item -

USE OF PRESCRIBED FIRE

The goal is to provide appropriate, efficient application of prescribed fire in support of the Forest Management Program. The monitoring questions include:

Are the acres being treated with prescribed fire meeting expected resource management objectives?

Are Forest fuel loadings exceeding natural levels and therefore placing Forest users, improvements and/or resource values at risk?

The use of fire as a tool to manage unwanted vegetation and debris, and to prepare areas for the planting of new trees, continued to be a significant portion of the work. During FY 1995, 3,100 acres were treated with prescribed fire.

One lightning ignited fire in the Alpine Lakes Wilderness was managed as a Prescribed Natural Fire.

Five Year Review

What has been Learned from Monitoring

In reviewing the past 5 years of fire activity, 1994 stands out as one of the most significant fire episodes in this century. The burned acreage and expenditures exceeded the monitoring thresholds for costs and loss of value. All other years were well within the established thresholds.

The most recent analysis shows that we continue to have an annual fire occurrence of 120 fires, of which 50 percent are lightning and 50 percent are human caused.

The scale of our management actions over the last 5 years has been too small. We have successfully implemented prescribed burns that met resource management objectives and reduced fuel loadings. But today's increased awareness about the dry forest ecosystem which includes fuel loadings and stand densities in excess of historic conditions, has caused us to look for new management techniques which can be applied on a much larger scale than used in the past.

The Forest is currently developing a *dry site strategy* which will allow the managers to implement fuel reduction and vegetation management activities on a large acreage scale that will decrease the possibility of high intensity fires.

Changes/updates in Forest Monitoring Plan

No changes are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives.

Recommendations Include:

The Forest continues to support the on-going research supporting fire as an important disturbance process in all dry site ecosystems.

O. AIR RESOURCE MANAGEMENT

Monitoring Item-

AIR RESOURCE MANAGEMENT

The goal is to maintain air quality in conjunction with all cooperating agencies. The monitoring questions include:

Are the impacts on air quality being considered in the management activities being proposed?

Is the Forest in compliance with direction outlined in the Clean Air Act, the Washington State Implementation Plan, and National Forest Policy?

All Districts continue to improve their techniques and documentation for the inclusion of Air Resource Management considerations in environmental documents. These efforts should prove to be effective as the plans are implemented in future years.

The Forest continued to work with other State and Federal agencies to improve the quality of air in eastern Washington. There were on-going efforts with the Washington State Department of Ecology and the Yakima County Clear Air Authority to lower the particulate levels in the Yakima Valley. The Forest also continued to comply with the direction issued by the Washington State Department of Natural Resources (DNR) for management of smoke emitted from prescribed fires.

The Wenatchee NF is also a member and supporter of the "Wenatchee Valley Clear Air Coalition", with primary objectives including:

Educating the public on Air Quality Objectives.

Improving air quality in the Wenatchee Valley.

Data collection and information sharing.

Five Year Review

The national visibility monitoring program entitled "Interagency Monitoring of Protected Visual Environments" (IMPROVE) began collecting data on visual air quality for selected Class I areas in 1988. Currently, 67 sites participate in the program across the U.S. Program goals are to determine existing visual air quality, identify sources of visibility impairment, and document long-term trends so progress towards the Clean Air Act goal to remedy existing visibility impairment can be tracked.

The Wenatchee and Mt. Baker-Snoqualmie National Forests jointly sponsor an IMPROVE site to monitor visibility in Alpine Lakes Wilderness. The equipment has been located at Snoqualmie Pass and operated by staff from the Cle Elum

Ranger District since summer of 1993. Due to the complexity of the analysis, data results often lag more than a year behind data collection so trend information is not yet available for the Snoqualmie Pass site. Preliminary results from the site do indicate some of the sources of visibility impairment. Important sources of visibility impairment include sulfates, nitrates, and organics. Sulfates are commonly associated with coal/oil fired power plants, and refining and smelting. Nitrates are generally associated with automobiles and other combustion sources. And organics can be natural emissions (biogenic), smoke, or industrial solvents. Less important to visibility impairment at Snoqualmie Pass are soot (diesel exhaust and smoke), and coarse particles (dust, smoke, and/or pollen).

The theoretical maximum distance one can see through a clean atmosphere is about 240 miles. With just three quarters of monitoring results currently available, visibility at Snoqualmie Pass ranges from about 67 miles (average of the cleanest 20 percent of days) to 15 miles (average of the dirtiest 20 percent of days). Fifteen miles is fairly typical for the dirtiest days for sites in the Pacific Northwest but 67 miles as an average of clean days is the poorest among the five IMPROVE sites in the Region. We will continue to examine future monitoring results to determine if this trend continues.

Recommendations Include:

Continue monitoring as scheduled.

P. MINERALS

Monitoring Item -

MINING SITE RECLAMATION

The goal is to ensure that disturbed lands are reclaimed to a use consistent with the Rehabilitation Standards and Guidelines.

Five Year Review

What has been Learned from Monitoring

The available information indicates that over the past several years (FY93 through FY 1995), the level of monitoring has decreased somewhat because of staffing reductions and priorities. In summary, it indicates that between 50 and 100 acres are disturbed annually by mineral exploration and development activity. Of this, 35 to 60 acres have been satisfactorily reclaimed, keeping with our reclamation objectives. The remaining acreage was not reclaimed due to continuing operations or the operators have been told to bring the reclamation into compliance.

Changes/updates in Forest Monitoring Plan

There were no monitoring requirements in the Wenatchee Forest Plan to implement. Monitoring was done through the normal mineral administration process. When administering mineral-related activities and compliance with reclamation objectives, the mineral administrators ensure that operators comply with the provisions in their approved operating plan. The reclamation requirements are developed by considering the Forest Plan Standards and guidelines, laws and regulations. Validation is accomplished through periodic compliance checks conducted by district mineral administrators. Therefore, it appears that no change is needed in the monitoring process at this time. However, additional funding and staffing would make the process more effective.

A monitoring evaluation form was developed to assist the mineral administrators in their effort to monitor mineral activity and compliance with reclamation requirements in the approved plan of operation; it has been sent to districts for their use. The monitoring process appears to be effective; however, due to the lack funding, lack of available personnel, and other priorities, reclamation monitoring was not done on 100 percent of the operations. Only 50 to 60 percent of the operations had been monitored for reclamation. Of those monitored, only about 60 percent had been appropriately reclaimed. The remaining 40 percent were either still in operation or have been told to complete the necessary reclamation. It is surmised that the 40 percent not monitored probably have similar rates of reclamation, but the actual percentage of operations meeting our reclamation objectives is not known; this will continue until funding is increased to the Forest Plan level.

Reclamation is being done on the larger, more environmentally sensitive operations, and it is assumed that similar results would be found on those operations that have not been monitored.

How well is Forest meeting Plan Goals and Objectives

As indicated above, the current level of mining activity is about the average per year for the past 5 years. There is no apparent trend in the number of mineral operations. They fluctuate with the economy, with mineral demand and with interest in recreational mining. Under the current administration process, the Standards and Guidelines, BMP's, Watershed Recovery, Forest Health and Ecosystems will be considered and provided for, and trends associated with those will be reflected in the mineral administration/mineral monitoring process. Since the level of activity has not changed much, the level of surface disturbance and associated reclamation has not changed much either.

Recommendations Include:

Continue to request additional funding that allows 100 percent monitoring of all mineral related activities.

A recommended Forest Plan adjustment at this time would be an amendment dealing with mining in Riparian Reserve areas.

Monitoring Item -

MINING OPERATING PLANS

The goal is to ensure that mining plans of operations and notices of intent to operate are processed in a timely manner and administered in-keeping with the Regulations and with Forest Management Goals and Management Area Standards and Guidelines.

Five Year Review***What has been Learned from Monitoring***

Approximately 163 plans of operations, notices of intent and permits were processed and administered during FY 1995. Average for the past 5 years is 162 per year (FY91-167, FY92-213, FY93-131, FY94-135 and FY 1995-163). However, these numbers are somewhat hard to relate because the reporting units and definitions have changed significantly over the past 5 years. In addition, a new Standard and Guideline included in the Northwest Forest Plan requires that a plan of operation, a reclamation plan and a bond be required for all mining operations located within Riparian Reserve areas. This will significantly increase the number processed and administered.

Changes/updates in Forest Monitoring Plan

There were no monitoring requirements in the Wenatchee Forest Plan to implement. Monitoring was done through the normal mineral administration process. When administering mineral-related activities, the mineral administrators are ensuring that operators are complying with the provisions in their approved operating plan; those provisions are developed by considering the Forest Plan Standards and Guidelines. The validation is accomplished through periodic compliance checks conducted by the District's mineral administrators.

The monitoring process, itself, appears to be effective; however, due to the lack of funding, lack of available personnel, and other priorities, monitoring was not done on 100 percent of the operations. As a consequence, the actual percentage of operations meeting our objectives is not known; and this will continue until funding is increased to the Forest Plan level. It is assumed that monitoring is being done on the larger, more environmentally sensitive operations, and similar results would be found on those operations that were not monitored.

How well is Forest meeting Plan Goals and Objectives

As indicated above, the current level of mining activity is about the average per year for the past 5 years. There is no apparent trend in the number of mineral operations; they fluctuate with the economy, with mineral demand and with interest in recreational mining. Under the current administration process, the Standards and Guidelines, BMP's, Watershed Recovery, Forest Health and Ecosystems will be considered and provided for, and trends associated with those will be reflected in the mineral administration and monitoring process.

Recommendations Include:

Continue to request additional funding that allows 100 percent monitoring of all mineral related activities.

Q. COMMUNITY EFFECTS AND RESOURCE BUDGETS

The goal is to provide local communities with a constant source of opportunity for the use of goods and services that provide for desired community growth. The Wenatchee National Forest Impact Area includes Chelan, Douglas, Kittitas, and Yakima Counties. The monitoring questions include:

Are payments to counties changing?

Are local populations changing?

Are local employment patterns changing?

Are lifestyles, attitudes, beliefs, or values changing?

Are Forest contributions to area forest products industries changing?

Changes in Payments to Counties

By law, 25 percent of the revenues collected by the Forest Service from the use of National Forest system lands and resources are returned to the counties as a source of funds for schools and roads. In Washington State, half of the funds (school portion) are redistributed throughout the State, while the road portion remains within the county.

Historically, the majority of the receipts have been generated by timber sales. Because of the sharp reduction in timber sales on public lands, the receipts have declined dramatically; however, timber sales still provide the majority of receipts. Special use recreation permit fees for ski areas and recreation residences have increased over the past 5 years due to re-appraisals of fair market value. Recreation fees for campgrounds have declined over the past 5 years as more Forest Service campgrounds have been converted to concessionaire operations.

In 1993, Congress passed Section 315 of the Interior and Related Agencies 1993 Appropriations Act which was designed to mitigate the economic effects associated with the listing of the northern spotted owl. For FY 1995 the Forest Service paid the states and counties affected by the listing of northern spotted owl at a rate equal to 82 percent of the 5 year (1986-1990) average. This owl guarantee payment will continue to decline 3 percent each year into the next decade.

COMMUNITY EFFECTS AND RESOURCE BUDGETS

Area	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Chelan	2,144,756.14	2,061,905.09	1,948,905.09	1,948,376.20	1,884,349.37
Douglas	2.99	2.86	2.70	2.70	2.61
Kittitas	885,707.05	790,851.86	731,547.75	731,499.24	707,795.97
Yakima	3,351,123.98	2,674,761.01	2,406,458.57	2,405,790.68	2,317,723.14
Total	6,392,590.16	5,527,520.62	5,086,335.28	5,085,688.82	4,909,871.09

Without the owl guarantee payment the payments to counties would have been as follows:

- (1) Chelan County, \$359,221.77, (2) Douglas County, .50, (3) Kittitas County, \$226,630.24, and (4) Yakima County, \$1,218,465.42.

The 1990 Wenatchee Forest Plan predicted county revenues of \$5,085,300 per year. The threshold of variability established by the 1990 Wenatchee Forest Plan is 25 percent. The payments to the counties are well within this threshold. The Northwest Forest Plan predicted county revenues of approximately \$1,800,000 for the Wenatchee Impact Area counties. This is very close to actual receipts of \$1,804,317.93. Legislation passed by Congress has resulted in a much higher payment to the impacted counties.

Change in Local Population

Population growth continues to increase in eastern Washington. This area has grown rapidly in the last 5 years as people left urban areas in western Washington. Net migration is highest for Chelan, Douglas, and Kittitas Counties. Both Chelan and Douglas Counties are drawing new residents that also work in the same area. Kittitas County is drawing people who live in the County, but continue to work and commute to the Puget Sound region. Yakima County shows the greatest percentage of increase due to births rather than in-migration. Yakima County is an urban area so it does not attract people seeking to leave urban areas. Its growth rate is similar to King County.

The improving economic conditions in western Washington and high living costs combined with low wages in eastern Washington could result in slower growth for eastern Cascade slope.

Percent Annual Population Growth Rates

Area	1991	1992	1993	1994	1995	1990-1995
Chelan County	1.82%	2.63%	2.56%	3.57%	3.45%	14.83%
Douglas County	4.94%	1.45%	2.15%	2.81%	1.02%	12.96%
Kittitas County	2.53%	1.46%	5.04%	1.71%	1.35%	12.63%
Yakima County	0.89%	1.78%	1.60%	2.59%	0.99%	8.09%
Wenatchee Impact Area	1.55%	1.86%	2.12%	2.69%	1.46%	10.07%
Washington State	2.75%	2.33%	2.43%	1.78%	1.79%	11.57%
King County	2.32%	1.44%	1.48%	0.74%	0.88%	7.05%

Estimated Total Population 1990-1995

Area	1990	1991	1992	1993	1994	1995
Chelan County	52,250	53,200	54,600	56,000	58,000	60,000
Douglas County	26,205	27,500	27,900	28,500	29,300	29,600
Kittitas County	26,725	27,400	27,800	29,200	29,700	30,100
Yakima County	188,823	190,500	193,900	197,000	202,100	204,100
Wenatchee Impact Area	295,993	300,591	306,192	312,693	321,094	325,795
Washington State	4,866,663	5,000,371	5,116,671	5,240,900	5,334,400	5,429,900
King County	1,507,305	1,542,286	1,564,486	1,587,700	1,599,500	1,613,600

The population growth in the Wenatchee Impact Area shows a large gain in minority population in the region; this is primarily growth in the Hispanic population. The increase in minority populations in King County is primarily the Asian population. Use of National Forest lands by these two minority groups is low.

Growth 1990-1994 by Minority and Non-Minority Populations

Area	Net Increase	% Non-Minority	% Minority
Chelan County	5,750	44%	56%
Douglas County	3,095	48%	52%
Kittitas County	2,975	72%	28%
Yakima County	13,277	-80%	180%
Washington State	467,708	62%	38%
King County	92,181	46%	54%

Components of Population Increase, 1990-1995

Area	Total Increase	Natural Increase	Natural Increase as % of Total	Net Migration	Net Migration as % of Total
Chelan County	7,750	2,052	26%	5,698	74%
Douglas County	3,395	1,184	35%	2,211	65%
Kittitas County	3,375	412	14%	2,903	86%
Yakima County	15,277	13,142	86%	2,135	14%
Washington State	563,237	201,144	36%	362,093	64%

Change in Local Employment Patterns

The State of Washington Employment Security reports for employment and wages are published on a one-year delay. The employment data for 1994 is the most recent available. The reports cover more than 85 percent of total employment. Beginning in 1990, small farms and their workers were included, with only students and family members excluded from the data.

In 1994, the economy in the Wenatchee Impact Area continued to grow more rapidly than the State of Washington. Average growth for Washington State in 1994 was 2.5 percent, while the Wenatchee Impact Area has employment growth of 3.9 percent. Growth for Chelan, Douglas, and Kittitas Counties were above State growth figures with Yakima County growing at the same rate as the State.

Total Covered Employment

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	29,757	30,296	30,655	32,166	34,479	15.9%
Douglas County	8,334	8,303	8,091	7,950	8,379	0.5%
Kittitas County	9,147	9,249	9,538	10,270	10,772	17.8%
Yakima County	82,706	81,466	85,919	87,867	90,022	8.8%
WNF Impact Area	129,944	129,314	134,203	138,253	143,652	10.5%
Washington State	2,144,370	2,160,883	2,205,665	2,248,245	2,303,539	7.4%

From 1990 through 1994, employment grew faster than the State average for the Wenatchee Impact Area.

Percent Change in Covered Employment by Sector from 1990 to 1994

Sector	Wenatchee Impact Area	State of Washington
Agriculture, Forestry, & Fish	2.2%	5.7%
Mining and Construction	34.5%	3.5%
Manufacturing	4.3%	-9.1%
Transportation & Public Utilities	-1.0%	4.1%
Wholesale Trade	16.8%	7.0%
Retail Trade	11.6%	8.1%
Finance, Insurance, & Real Estate	16.1%	7.3%
Services	16.3%	19.3%
Government	15.2%	10.5%

The major economic sectors in the area are agriculture, retail trade, services, and government. Agriculture is the largest sector, but indicative of change it grew at a slower rate within the impact area than the State average. Construction, government, retail trade, and finance, insurance, and real estate all grew faster than the State average. This is reflective of the high population growth in the area. An indication that business as well as individuals are relocating to eastern Washington is that manufacturing and wholesale trade are above State averages.

The large number of seasonal jobs and strong in-migration has held down wages. The following table shows wages in the impact area compared to State averages.

Average Real Wages (1994 Base Year)

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	18,211	19,341	19,101	19,048	19,051	4.6%
Douglas County	14,349	15,027	15,526	15,653	15,584	8.6%
Kittitas County	18,078	18,045	18,186	17,987	17,844	-1.3%
Yakima County	17,280	17,674	17,948	19,108	18,500	7.1%
WNF Impact Area	17,361	17,921	18,082	18,201	18,413	6.1%
Washington State				26,255	26,359	

Strong in-migration increases the supply of workers, therefore reducing the wages employers need to pay. Kittitas County has had total employment growing rapidly at the same time unemployment was growing due to in-migration. Much of the in-migration is driven by flight from urban areas to a perceived higher quality of life in eastern Washington.

The Lumber and Wood Products Manufacturing, Paper and Allied Products Manufacturing, Eating and Drinking Establishments in the Retail Trade Sector, and Hotels and Other Lodging Places in the Service Sector are industries directly affected by Forest Service activities. These sectors have become less dependent on the Forest Service since 1990.

The development of Yakima and Wenatchee as convention centers and week-end destinations for Puget Sound residents has lead to a tourism industry based on sunny and warm weather. The development of urban parks in these communities is attracting visitors that only drive through National Forest lands. Cle Elum, Leavenworth, Lake Wenatchee, and Chelan all attract visitors in which National Forest lands are primary or important reason for visiting these areas. There are no estimates for the contribution of public lands to these economic sectors.

The substantial reduction in timber harvest levels on federal lands has been mitigated to a certain extent by increased timber harvest from small landowners. This was in response to high prices brought on by lumber shortages in the early 1990s.

The following tables show employment and wages for those economic sectors directly affected by Forest Service activities.

Covered Employment: Manufacturing - Lumber and Wood Products

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	236	172	208	202	208	-11.9%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	170	169	156	161	145	-14.7%
Yakima County	1,490	1,593	1,677	1,726	1,884	26.4%
WNF Impact Area	1,896	1,934	2,041	2,089	2,237	18.0%

Covered Employment: Manufacturing - Paper and Allied Products

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	0	0	0	0	0	0.0%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	0	0	0	0	0	0.0%
Yakima County	862	692	707	684	677	-21.5%
WNF Impact Area	862	692	707	684	677	-21.5%

Covered Employment: Retail Trade - Eating and Drinking Places

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	1,786	1,858	2,098	2,163	2,212	23.9%
Douglas County	490	464	478	508	551	12.4%
Kittitas County	1,104	1,122	1,189	1,250	1,447	31.1%
Yakima County	4,039	4,018	4,309	4,374	4,405	9.1%
WNF Impact Area	7,419	7,462	8,074	8,295	8,615	16.1%

Covered Employment: Services - Hotels and Lodging Places

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	872	881	852	868	857	-1.7%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	1,410	1,736	1,750	1,891	1,901	34.8%
Yakima County	846	671	635	584	614	-27.4%
WNF Impact Area	1,936	1,808	1,723	1,698	1,688	-12.8%

Covered Employment: Services - Amusement and Recreation Services

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	452	504	328	364	397	-12.2%
Douglas County	80	65	81	105	116	45.0%
Kittitas County	516	372	362	260	351	-32.0%
Yakima County	836	829	815	942	1,016	21.5%
WNF Impact Area	1884	1770	1586	1671	1880	-0.2%

Average Real Wages: Manufacturing - Lumber and Wood Products

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	21,893	19,607	20,212	22,193	22,236	1.6%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	25,351	24,441	25,143	22,491	20,869	-17.7%
Yakima County	25,787	25,051	25,423	24,322	24,674	-4.3%
WNF Impact Area	25,263	24,514	24,871	23,975	24,201	-4.2%

Average Real Wages: Manufacturing - Paper and Allied Products

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	0	0	0	0	0	0.0%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	0	0	0	0	0	0.0%
Yakima County	33,578	30,541	30,746	30,982	32,016	-4.7%
WNF Impact Area	33,578	30,541	30,746	30,982	32,016	-4.7%

Average Real Wages: Retail Trade - Eating and Drinking Places

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	7,568	7,595	7,861	7,996	8,334	10.1%
Douglas County	6,659	6,608	7,339	7,568	7,541	13.2%
Kittitas County	7,942	7,753	7,844	7,754	7,761	-2.3%
Yakima County	7,338	7,710	7,772	8,234	8,111	10.5%
WNF Impact Area	7,438	7,620	7,780	8,059	8,073	8.5%

Average Real Wages: Services - Hotels and Lodging Places

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	9,102	9,453	9,216	9,481	9,603	5.5%
Douglas County	0	0	0	0	0	0.0%
Kittitas County	7,257	7,283	7,742	7,841	8,760	20.7%
Yakima County	9,221	9,680	8,840	9,411	9,927	7.6%
WNF Impact Area	8,946	9,230	8,876	9,219	9,613	7.4%

Average Real Wages: Services - Amusement and Recreation Services

Area	1990	1991	1992	1993	1994	% Change 90-94
Chelan County	9,544	9,741	8,909	9,023	9,275	-2.8%
Douglas County	10,883	11,004	11,626	13,037	12,905	18.6%
Kittitas County	5,621	6,074	5,739	4,123	5,997	6.7%
Yakima County	8,777	9,707	11,134	10,132	10,560	20.3%
WNF Impact Area	8,186	9,001	9,468	9,138	9,581	17.0%

The employment and wage changes will continue to be monitored. The changes over the past few years are within expected ranges.

Change in Lifestyles, Attitudes, Beliefs, or Values

The first decade of the 1990s was characterized by heavy urban migration to rural areas. This migration was particularly heavy in those areas with outdoor recreation opportunities. Because of the Wenatchee Impact Area being so close to Puget Sound, there was also an increase in people commuting from eastern Washington to the Puget Sound basin.

The slow economic growth in the urban areas during the early 1990s resulted in downsizing, early retirements, and layoffs. The development of communication technology freed many white-collar professionals from the requirement of living in an urban area. The decline in gas prices earlier in the decade led to many people willing to commute long distances. One additional trend has been that businesses have been relocating to eastern Washington for the same reasons as individuals.

The migration of people to north central Washington can be characterized as being composed of Returnees, Retirees, Urban Transplants or Refugees, and Commuters. The migration of ex-urban residents has led to conflicts between new residents and traditional rural lifestyles. This conflict has been most acute in Chelan County where right-to-farm ordinances and private property rights have been important issues. Chelan County has passed a Catron-County type ordinance that requires the examination of effects on the customs, culture, and economic stability of Chelan County before proceeding with any project.

The in-migration has had a positive effect on economic statistics for the area. The statistics mask some of the economic changes that rural communities are going through. For example, Kittitas County has shown strong job growth, but unemployment has also increased significantly since many of the new migrants do not find jobs. In Chelan and Douglas Counties influx of national stores has resulted in the closing of small family owned stores and expansion of low-wage retail trade jobs at chain stores. The economic changes in the Wenatchee Impact Area are reflective of national trends of greater economic concentration, particularly in retail trade and service sectors of the economy.

There have been significant changes in trends with regard to lifestyles, attitudes, beliefs, and values with in-migration. The area is slowly changing; becoming more urban in lifestyles, attitudes, beliefs, and values. These changes are driven by national trends and outside the scope of Forest Service programs. The changes are within the threshold of variability identified in the Monitoring Item.

Changes in Forest Contribution to Forest Products Industry

The following table shows the volume harvested on Forest Service managed lands and the volume offered for sale:

COMMUNITY EFFECTS AND RESOURCE BUDGETS

Fiscal Year	Volume Offered	Volume Harvested
1990	227	173
1991	15.4	136
1992	22.9	94
1993	16.8	58
1994	12	33
1995	98.8	18

The volume sold in 1990 reflects the requirements of Section 318 of the Federal Budget Act. The significant drop in volume sold in 1991 is the result of court and agency decisions on the management of northern spotted owl habitat. Volume offered continued to drop through 1994 in response to court and agency decisions on the management of northern spotted owl habitat and the development and adoption of the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. The volume offered in FY 1995 reflects the salvage volume offered after the wildfires of 1994.

The original timber sale program goal in the 1990 Wenatchee Forest Plan was 146 million board feet. This was amended to 24 million board feet Probable Sale Quantity in the Northwest Forest Plan. After removal of the salvage volume the volume offered will revert back to 24 million board feet.

Changes/updates in Forest Monitoring Plan

No changes or updates are needed in the Forest Monitoring Plan.

How well is Forest meeting Plan Goals and Objectives

The Forest is meeting its Plan Goals and Objectives.

R. GENERAL MONITORING OF STANDARDS & GUIDELINES

Monitoring Item-

STANDARD AND GUIDELINES GENERAL

The goal is to ensure implementation and validation of Forest Plan Standards and Guidelines. Monitoring seeks to assure Forest goals, outputs, and the desired future condition. The monitoring questions are:

Are Forest Plan Standards and Guidelines being implemented?

Are implemented Standards and Guidelines achieving the expected results?

Proposed projects are reviewed for consistency with Forest Plan Standards and Guidelines during the NEPA process. With the signing of the Forest Plan in 1990 the Wenatchee National Forest held two training sessions on implementing the Wenatchee Forest Plan. Ranger District and Supervisor's Office employees attended the sessions which covered Standards and Guidelines and their consistent interpretation. The Forest also sponsored a week long Forest Plan Implementation Course, 1900-1. All Forest employees involved in Forest Plan Implementation attended the course.

After the signing of the Northwest Forest Plan, training sessions were held in Yakima and Leavenworth to ensure that Forest employees understood the rationale and Standards and Guidelines within the Plan. The Supervisor's Office has continued to help the Ranger Districts with interpretations of the Northwest Forest Plan.

For the first 4 years the Forest Supervisor, Staff, and District Rangers reviewed projects for consistency with Standards and Guidelines. This review indicated that Standards and Guidelines were being followed.

The Northwest Forest Plan has called for an interagency monitoring program on implementation monitoring. These procedures were developed in FY 1995 and will be implemented in FY 1997.

The monitoring report section on *Soils* has further discussion on the Standard and Guideline for soil compaction. This has resulted in a proposed Forest policy to ensure that this Standard and Guideline will be met.

Recommendations Include:

Continue monitoring as scheduled. Specific recommendations have been made under the appropriate monitoring items.



FOREST PLANNING UPDATE

A. FOREST PLAN APPEALS

The remaining appeal of the 1990 Wenatchee Forest Plan by the Columbia River Intertribal Fish Commission (CRITFC) was resolved on May 20, 1996, through a decision issued by Sterling Wilcox, Reviewing Officer for U.S. Forest Service Chief Jack Ward Thomas. Although the original CRITFC appeal was directed to the 1990 Plan, it was evaluated in the final appeal decision against the Wenatchee Forest Plan, as amended by the 1994 Northwest Forest Plan, since any relief granted would affect the Plan as it currently exists. The Reviewing Officer's decision determined that the 1994 amendment to the Forest Plan provided much of the relief requested by the appellant, and that no further relief was warranted. Accordingly, the Regional Forester's original Wenatchee National Forest Plan decision was affirmed.

An important finding in the Reviewing Officer's decision was the point that National Forest planning is an ongoing process. Monitoring, evaluation, amendments and revisions help to keep Forest Plans responsive and dynamic, by taking into account progress in science and technology, discovery of new relationships, and new information about natural environments. This process allows for the continued participation of the public in the incorporation of new information and in any necessary modification of existing Forest Plans.

In December 1995, Reviewing Officer Wilcox also issued a decision on portions of the Sierra Club, Cascade Chapter appeal of the 1990 Wenatchee Forest Plan. Earlier decisions had been issued for the same appeal in October 1991 and January 1993. However, these earlier decisions purposefully did not address any Sierra Club issues that were directly or indirectly related to management of northern spotted owl habitat, in anticipation of the completion of a court-ordered, long term recovery strategy for the northern spotted owl and related old growth species. Recognizing that there would be changes in Forest Service management direction as a result of this strategy, the Reviewing Officer deferred his decision on the relevant Sierra Club appeal issues, until after completion of the recovery strategy.

The Chief's subsequent 1995 appeal decision noted that the Northwest Forest Plan amendment of 1994, which addressed the "Management of Habitat for Late-Successional and Old-Growth Forest-Related Species Within the Range of the Northern Spotted Owl", provided much of the relief requested by the appellants in their 1990 appeal. The Regional Forester's decision to approve the Wenatchee Forest Plan, as amended, was accordingly affirmed.

Five Year Review

Following the issuance of the Record of Decision for the Wenatchee National Forest Land and Resource Management Plan in March 1990, twenty appeals were filed by individuals, organizations, and industry representatives during the subsequent 90 day appeal period. These covered a wide variety of issues, including community stability, recreation, trails, roadless area management, wild and scenic rivers, treaty rights, scenery, wilderness management, wildlife fisheries, timber harvest levels and methods, old growth, cumulative effects, soil, water, riparian areas, range, socio-economic analysis, and the planning process.

The last of these appeals was resolved in the 1995 decision of the Chief regarding the Sierra Club, Cascade Chapter appeal, and his 1996 decision regarding the appeal by the Columbia Intertribal Fish Commission. Both of these decisions relied upon the Northwest Forest Plan amendment as providing the relief requested by the appellants (see previous discussion).

In total, 19 of the 20 appeal decisions affirmed the Regional Forester's 1990 Record of Decision (as amended in 1994), of which four ultimately led to litigation (see below). The one remaining appeal was dismissed by the Chief after it was withdrawn in 1995 by the Yakama Indian Nation. Instead, completion of a Memorandum of Understanding between the Yakama and the Forest Service was executed to address their concerns.

B. FOREST PLAN LITIGATION

Five Year Review

A total of five lawsuits were filed by interest groups with respect to implementation of the Wenatchee Forest Plan. These cases and their final disposition were as follows:

Northwest Motorcycle Association v. United States Department of Agriculture- Following their unsuccessful appeal of the 1990 Forest Plan Record of Decision, the Northwest Motorcycle Association filed a complaint in the U.S. District Court for the Eastern District of Washington, challenging the Forest Plan decision to close the North Fork Entiat Trail to motorized use. The August 1992 Court decision by Judge Justin Quackenush, which ruled in favor of the Forest Service, was subsequently appealed by the Plaintiffs before the Ninth Circuit Court of Appeals. The Eastern District Court decision was affirmed by the Ninth Circuit in March 1994.

The Sierra Club, et al. V. Butruille- In 1992, a coalition of environmental groups filed suit in the U.S. District Court for the Western District of Washington. The plaintiffs sought an order declaring that the Forest Service Chief's decisions with respect to the Sierra Club's administrative appeals of the Wenatchee, Okanogan, and Mount Baker-Snoqualmie National Forest Land Management Plans failed to decide these appeals on their merits. Of particular concern were those appeal issues that were directly or indirectly related to habitat management of the northern spotted owl. In January 1993, the Chief responded to the original appeal issues with a written decision

that deferred reconsideration of the spotted owl-related issues until amendment or revision of the Forest Plan, and with instructions to the three Forests involved that these issues should also be addressed during project-level NEPA analysis. Subsequently, Judge William Dwyer issued an order on February 23, 1993, determining all claims to be resolved.

Pilchuck Audubon Society, et al. v. U.S. Forest Service- In 1992, the Pilchuck Audubon Society and other environmental organizations filed a suit against the Forest Service, contending that the 1989 and 1990 Land and Resource Management Plans for the Wenatchee, Okanogan, and Colville National Forests failed to assess the environmental effects associated with forest health problems. While the legal discovery process was underway, the Forest Service began work on regional ecosystem planning efforts, including the 1994 Northwest Forest Plan. In light of this development, parties to the litigation agreed not to proceed with claims in the case at that time. As a result, the case was removed from the Western District Court of Washington's active caseload until further application by the parties or order of the Court.

Save Chelan Alliance v. U.S. Forest Service- A third lawsuit was also filed in 1992, this one on behalf of the Save Chelan Alliance organization. The suit challenge implementation of the Wenatchee Forest Plan and the sale of certain tracts of timber within the Lake Chelan watershed. The Plaintiffs alleged that the effects of timber harvest on the Lake Chelan watershed and the Community of Chelan were not adequately addressed in the Forest Plan FEIS or in the timber sale Environmental Assessment. Negotiations with Save Chelan Alliance resulted in a dismissal of the lawsuit, with the Terms of Stipulation for Dismissal establishing restrictions on most new timber harvest activities until an environmental analysis was completed. This analysis was to reexamine management allocations for the Lake Chelan watershed that were established by the Forest Plan, and analyze the effects of those allocations on the resources, community, and residents of Lake Chelan. The terms of the Stipulation for Dismissal were satisfied in the 1996 First Creek Basin Restoration Project EIS, which included an assessment of the effects of the Forest Plan allocations on the Lake Chelan environment and community.

Sierra Club and Washington Wilderness Coalition v. Jack Ward Thomas- In this fifth and last of the Forest Plan lawsuits, Sierra Club Cascade Chapter filed a complaint in the Western District Court of Washington on the basis that the Forest Service had not issued a final ruling on the merits of their 1990 administrative appeals of the land and resource management plans for the Wenatchee, Okanogan, and Mount Baker-Snoqualmie National Forests. This suit was a follow-up to the earlier *Sierra Club v. Buttrille*, and sought a final determination of all administrative appeal issues that had been deferred by the Chief. This case was dismissed by Judge Thomas Zilly in February 1996, as a result of the Chief's December 1995 issuance of the final decisions on the Sierra Club Forest Plan appeals.

There have also been three lawsuits on site-specific projects:
White Pass Ski Area expansion,
Tip-Top Timber Sale, and
Plum Creek road access across Nation Forest managed lands.

Resolution of one of these, the Tip-Top Timber Sale, is still pending.

C. FOREST PLAN AMENDMENTS

There were three amendments to the Wenatchee Forest Plan in 1995. The amendments were initiated by land exchanges and proposed activities on the newly acquired lands. The amendments assigned land allocations to the acquired lands. The surrounding Forest Plan allocations were extended to incorporate the acquired lands. At the end of FY 1995 there had been nine amendments to the Wenatchee Forest Plan.



**U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE**

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